

WE LOVE AE86

REPAIR MANUAL FOR CHASSIS & BODY

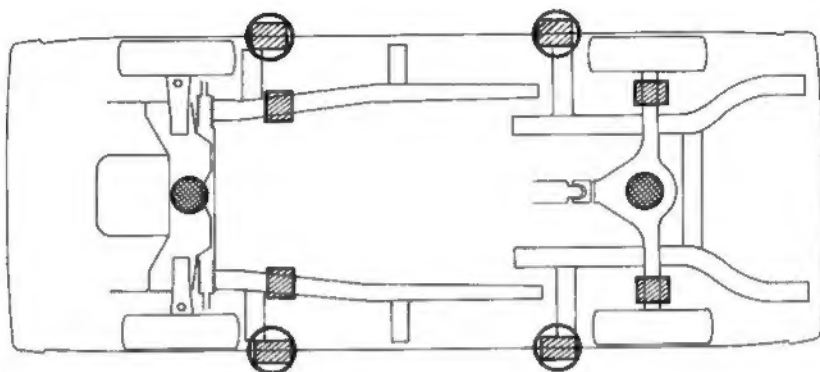
COROLLA *FR*
(*SPRINTER*)

AE86 series May, 1983

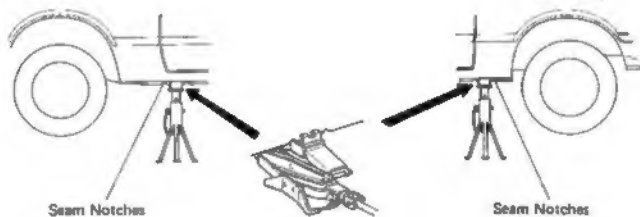
TOYOTA COROLLA FR REPAIR MANUAL FOR CHASSIS & BODY

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VEHICLE LIFT AND SUPPORT LOCATIONS



Front ←



JACK POSITION

Front Center of front suspension crossmember
 Rear Center of rear axle housing

PANTOGRAPH JACK POSITION SUPPORT POSITION

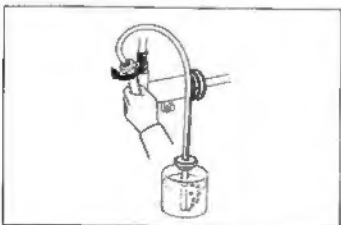
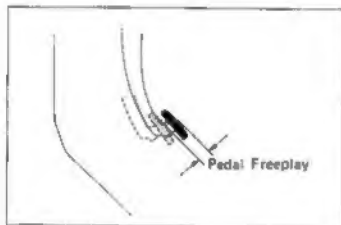
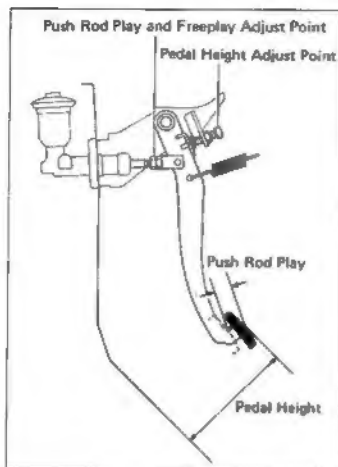
Safety stand

CLUTCH

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TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Hard to shift or will not shift	Clutch pedal freeplay excessive	Adjust pedal freeplay	CL-3
	Clutch release cylinder faulty	Repair release cylinder	CL-6
	Clutch master cylinder faulty	Repair master cylinder	CL-4
	Clutch disc out of true, lining greasy or broken	Inspect clutch disc	CL-8
	Splines on input shaft or clutch disc dirty or burred	Repair as necessary	CL-7
	Clutch pressure plate faulty	Replace clutch cover	CL-9
Transmission jumps out of gear	Clutch pilot bearing worn	Replace pilot bearing	CL-9
Clutch slips	Clutch pedal freeplay insufficient	Adjust pedal freeplay	CL-3
	Clutch disc lining oily or worn out	Inspect clutch disc	CL-8
	Pressure plate faulty	Replace clutch cover	CL-9
	Release fork binds	Inspect release fork	CL-7
Clutch grabs/chatters	Clutch disc lining oily or worn out	Inspect clutch disc	CL-8
	Pressure plate faulty	Replace clutch cover	CL-9
	Clutch diaphragm spring bending	Align clutch diaphragm	CL-11
	Engine mounts loose	Repair as necessary	
Clutch pedal spongy	Air in clutch lines	Bleed clutch system	CL-3
	Clutch release cylinder faulty	Repair release cylinder	CL-6
	Clutch master cylinder faulty	Repair master cylinder	CL-4
Clutch noisy	Loose part inside housing	Repair as necessary	
	Release bearing worn or dirty	Replace release bearing	CL-10
	Pilot bearing worn	Replace pilot bearing	CL-9
	Release fork or linkage sticks	Repair as necessary	



CHECK AND ADJUSTMENT OF CLUTCH PEDAL

1. CHECK THAT PEDAL HEIGHT IS CORRECT

Pedal height from asphalt sheet:

LHD 161 - 171 mm (6.34 - 6.73 in.)

RHD 162 - 172 mm (6.38 - 6.77 in.)

2. IF NECESSARY, ADJUST PEDAL HEIGHT

(a) Remove the instrument lower finish panel and air duct.

(b) Loosen the lock nut and turn the stopper bolt until the height is correct. Tighten the lock nut.

3. CHECK THAT PEDAL FREEPLAY AND PUSH ROD PLAY ARE CORRECT

(Pedal Freeplay)

Push in on the pedal until the beginning of clutch resistance is felt.

Pedal freeplay: 13 - 23 mm (0.51 - 0.91 in.)

Push rod play at pedal top:

1.0 - 5.0 mm (0.039 - 0.197 in.)

4. IF NECESSARY, ADJUST PEDAL FREEPLAY AND PUSH ROD PLAY

(a) Loosen the lock nut and turn the push rod until the freeplay and push rod play are correct.

(b) Tighten the lock nut.

(c) After adjusting the pedal freeplay, check the pedal height.

(d) Install the air duct and instrument lower finish panel.

BLEEDING OF CLUTCH SYSTEM

NOTE: If any work is done on the clutch system or if air is suspected in the clutch lines, bleed the system of air.

CAUTION: DO NOT let brake fluid remain on a painted surface. Wash it off immediately.

1. FILL CLUTCH RESERVOIR WITH BRAKE FLUID

Check the reservoir frequently. Add fluid if necessary.

2. CONNECT VINYL TUBE TO BLEEDER PLUG

Insert the other end of the tube in a half-full container of brake fluid.

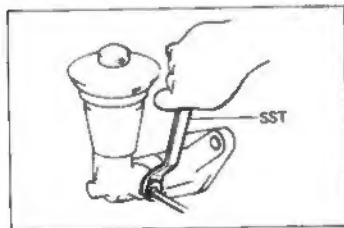
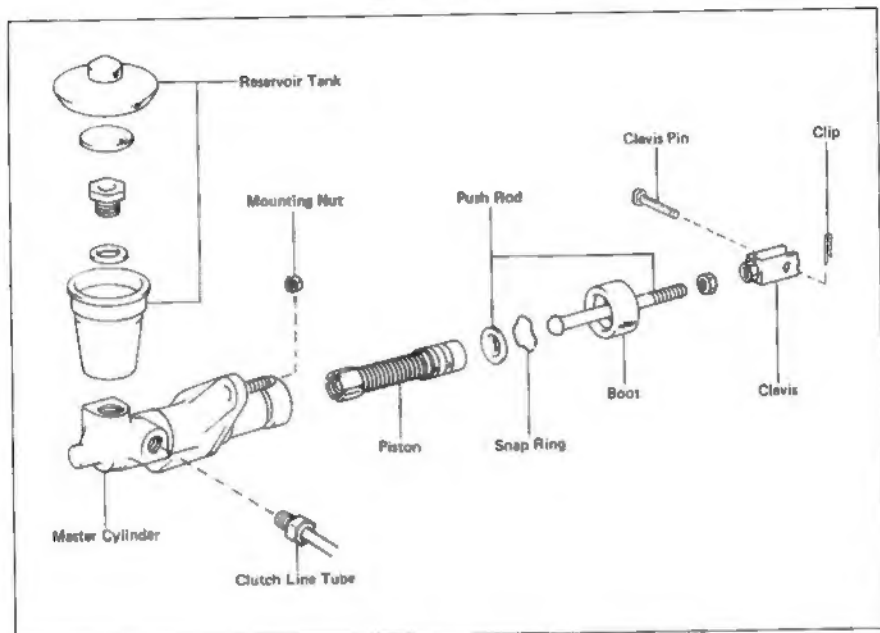
3. BLEED CLUTCH LINE

(a) Slowly pump the clutch pedal several times.

(b) While depressing the pedal, loosen the bleeder plug until the fluid starts to run out. Then close the bleeder plug.

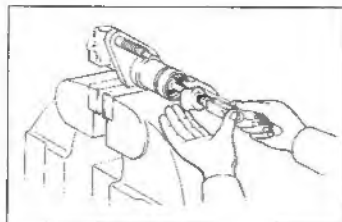
(c) Repeat this procedure until there are no more air bubbles in the fluid.

CLUTCH MASTER CYLINDER COMPONENTS



REMOVAL OF MASTER CYLINDER

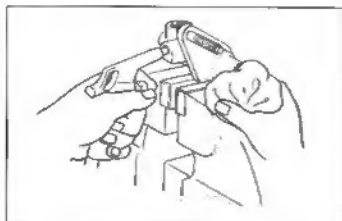
1. DRAW OUT FLUID WITH SYRINGE
2. DISCONNECT CLUTCH LINE TUBE
Using SST, disconnect the tube.
SST 09751-36011
3. REMOVE INSTRUMENT LOWER FINISH PANEL AND AIR DUCT
4. REMOVE PEDAL RETURN SPRING
5. REMOVE CLEVIS PIN
Remove the clip and clevis pin.
6. REMOVE MOUNTING NUTS AND PULL OUT MASTER CYLINDER

**DISASSEMBLY OF MASTER CYLINDER**

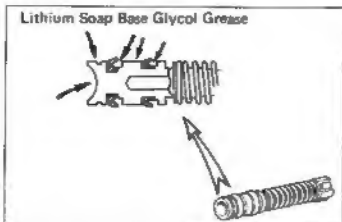
(See page CL-4)

1. REMOVE RESERVOIR TANK**2. REMOVE PUSH ROD**

- (a) Pull back the boot and, using a screwdriver, remove the snap ring.
- (b) Pull out the push rod.

**3. REMOVE PISTON**

Using compressed air, remove the piston from the cylinder.

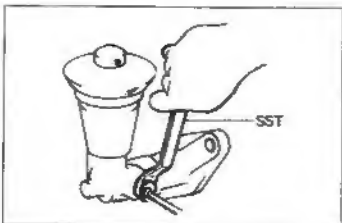
**ASSEMBLY OF MASTER CYLINDER**

(See page CL-4)

- 1. COAT PARTS WITH LITHIUM SOAP BASE GLYCOL GREASE, AS SHOWN**
- 2. INSERT PISTON INTO CYLINDER**
- 3. INSTALL PUSH ROD ASSEMBLY WITH SNAP RING**
- 4. INSTALL RESERVOIR TANK**

INSTALLATION OF MASTER CYLINDER

(See page CL-4)

**1. INSTALL MASTER CYLINDER WITH MOUNTING NUTS****2. CONNECT CLUTCH LINE TUBE**

Using SST, connect the tube.

SST 09751-36011

3. CONNECT CLEVIS, AND INSTALL CLEVIS PIN AND CLIP

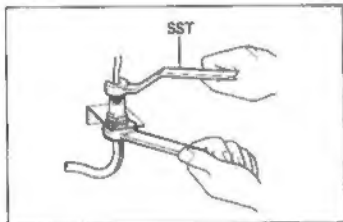
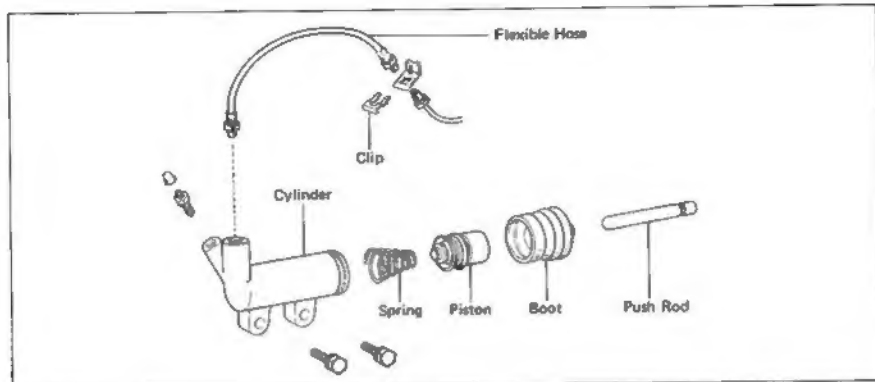
Secure the clevis pin with the clip.

4. INSTALL PEDAL RETURN SPRING**5. FILL CLUTCH RESERVOIR WITH BRAKE FLUID AND BLEED CLUTCH SYSTEM (See page CL-3)****6. CHECK FOR LEAKS****7. CHECK AND ADJUST CLUTCH PEDAL**

(See page CL-3)

8. INSTALL INSTRUMENT LOWER FINISH PANEL AND AIR DUCT

CLUTCH RELEASE CYLINDER COMPONENTS

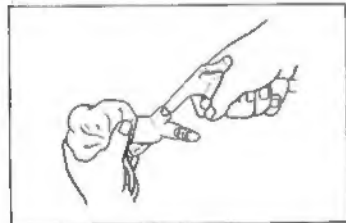


REMOVAL OF RELEASE CYLINDER

1. DISCONNECT FLEXIBLE HOSE

Using SST, disconnect the union.
SST 09751-38011

2. REMOVE TWO BOLTS AND PULL OUT RELEASE CYLINDER



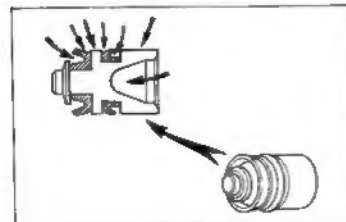
DISASSEMBLY OF RELEASE CYLINDER

1. PULL OUT PUSH ROD

2. REMOVE BOOT

3. REMOVE PISTON

Using compressed air, remove the piston and spring from the cylinder.



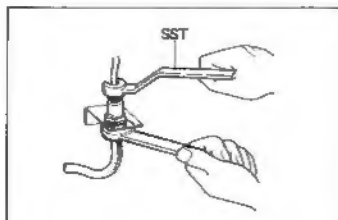
ASSEMBLY OF RELEASE CYLINDER

(See page CL-6)

1. COAT PISTON WITH LITHIUM SOAP BASE GLYCOL GREASE, AS SHOWN

2. INSERT SPRING AND PISTON INTO CYLINDER

3. INSTALL BOOT AND INSERT PUSH ROD

**INSTALLATION OF RELEASE CYLINDER**

(See page CL-6)

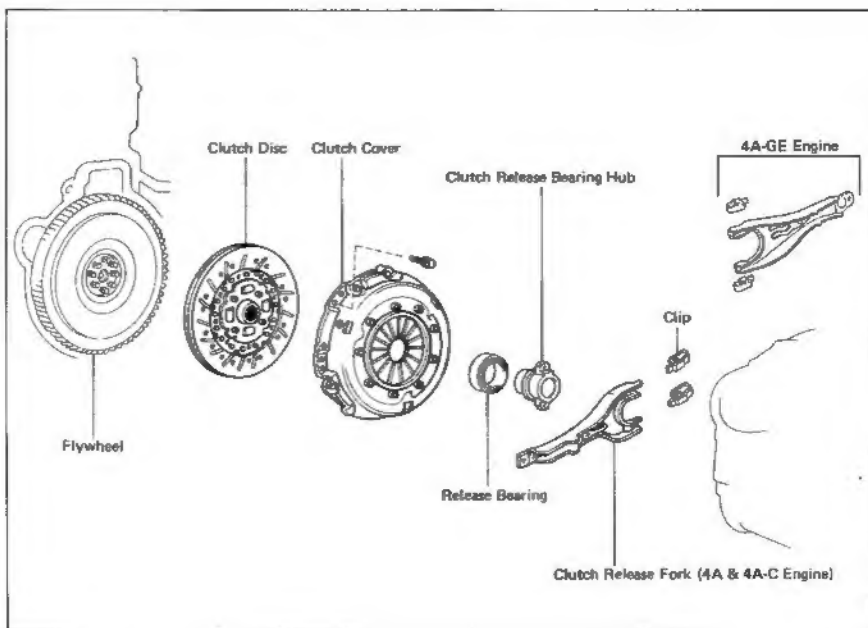
1. INSTALL RELEASE CYLINDER WITH TWO BOLTS**2. CAREFULLY CONNECT FLEXIBLE HOSE**

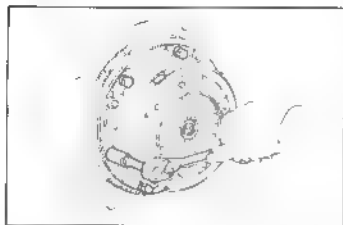
Using SST, connect the union.

SST 09751-38011

Torque: Union nut 155 kg-cm (11 ft-lb)

Flexible hose 235 kg-cm (17 ft-lb)

3. FILL CLUTCH RESERVOIR WITH BRAKE FLUID AND BLEED CLUTCH SYSTEM
(See page CL-3)**4. CHECK FOR LEAKS****CLUTCH UNIT
COMPONENTS**



REMOVAL OF CLUTCH UNIT

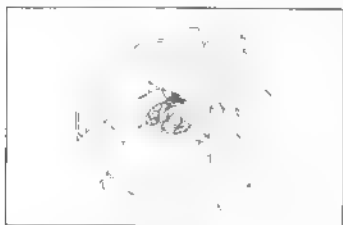
(See page CL-7)

1. REMOVE TRANSMISSION (See page MT-3, 4)

NOTE Do not drain the transmission oil

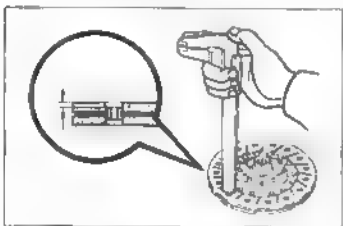
2. REMOVE CLUTCH COVER AND DISC

- Loosen the set bolts one turn at a time until the spring tension is released
- Remove the set bolts and pull off the clutch assembly



3. REMOVE BEARING, HUB AND FORK FROM TRANSMISSION

- Remove the retaining clip and pull off the bearing and hub.
- Remove the fork and boot



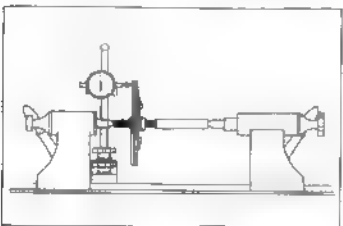
INSPECTION OF CLUTCH PARTS

1. INSPECT CLUTCH DISC FOR WEAR OR DAMAGE

Using calipers, measure the rivet head depth

Minimum rivet depth: 0.3 mm (0.012 in.)

If a problem is found, replace the clutch disc.

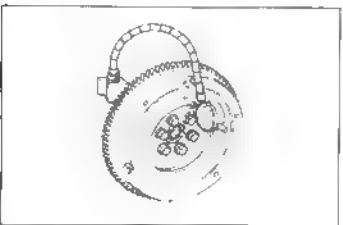


2. INSPECT CLUTCH DISC RUNOUT

Using a dial indicator, check the disc runout

Maximum runout: 0.8 mm (0.031 in.)

If runout is excessive, replace the disc.

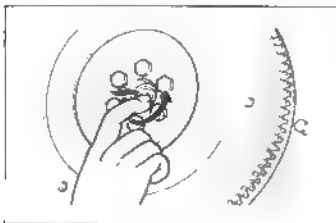


3. INSPECT FLYWHEEL RUNOUT

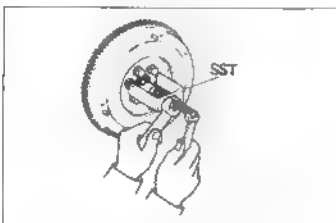
Using a dial indicator, check the flywheel runout

Maximum runout: 0.2 mm (0.008 in.)

If runout is excessive, repair or replace the flywheel

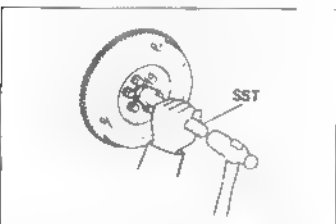
**4. INSPECT PILOT BEARING**

Turn the bearing by hand while applying force in the axial direction.

**5. IF NECESSARY, REPLACE PILOT BEARING**

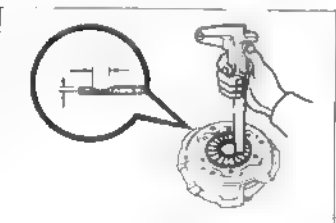
(a) Using SST, remove the pilot bearing.

SST 09303 35011



(b) Using SST, install the pilot bearing.

SST 09304-30012

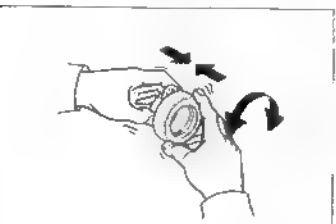
**6. INSPECT DIAPHRAGM SPRING FOR WEAR**

Using calipers, measure the diaphragm spring for depth and width of wear

Limit: Depth 0.6 mm (0.024 in.)

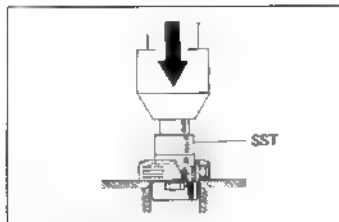
Width 5.0 mm (0.197 in.)

If necessary, replace the clutch cover

**7. INSPECT RELEASE BEARING**

Turn the bearing by hand while applying force in the axial direction.

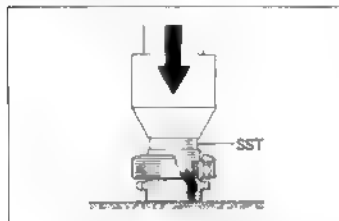
NOTE: The bearing is permanently lubricated and requires no cleaning or lubrication.



8. IF NECESSARY, REPLACE RELEASE BEARING

- (a) Using a press and SST, press the release bearing from the hub.

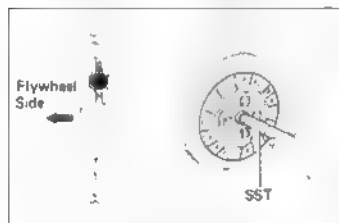
SST 09315-00010



- (b) Using a press and SST, press a new release bearing into the hub.

SST 09315-00010

- (c) After installing the bearing, check that there is no drag on the bearing when it is turned under pressure.



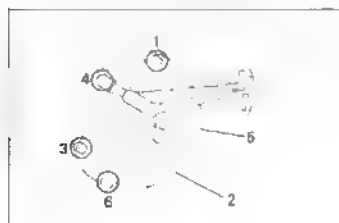
INSTALLATION OF CLUTCH UNIT

(See page CL-7)

1. INSTALL DISC ON FLYWHEEL

Using SST, install the disc on the flywheel.

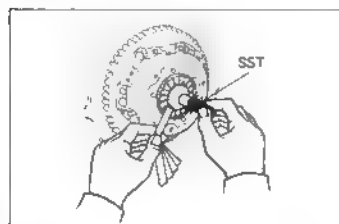
SST 09301 36010



2. INSTALL CLUTCH COVER

Tighten the bolts evenly and gradually. Make several passes around the cover until it is snug. Torque the bolts.

Torque: 195 kg-cm (14 ft-lb)

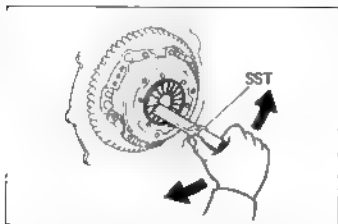


3. CHECK DIAPHRAGM SPRING TIP ALIGNMENT

Using a feeler gauge and SST, measure the gap between the spring tips and the tool.

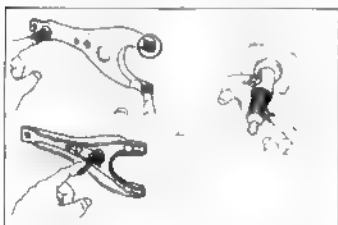
SST 09301-00013

Maximum non-alignment: 0.5 mm (0.020 in.)

**4. IF NECESSARY, ADJUST SPRINGS**

Using SST, bend the springs until alignment is correct.

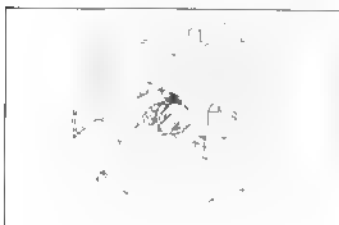
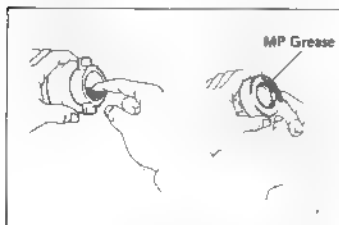
SST 09301-00013

**5. APPLY MOLYBDENUM DISULPHIDE LITHIUM BASE GREASE (NLGI NO. 2) OR MP GREASE**

(a) Apply molybdenum disulphide lithium base grease to the following parts:

- Release fork and hub contact point
- Release fork and push rod contact point
- Release fork pivot point
- Clutch disc spline
- Release bearing hub inside groove

(b) Apply MP grease to the front of the release bearing.

**6. INSTALL BOOT, FORK, HUB AND BEARING ON TRANSMISSION****7. INSTALL TRANSMISSION (See pages MT-22, 23)**

MANUAL TRANSMISSION

	Page
TROUBLESHOOTING	MT-2
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Removal of Transmission	MT-3
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Disassembly of Transmission	MT-7
Inspection of Transmission Components	MT-10
Assembly of Transmission	MT 15
Installation of Transmission	MT-22

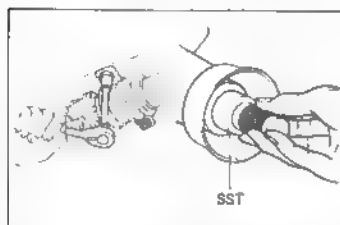
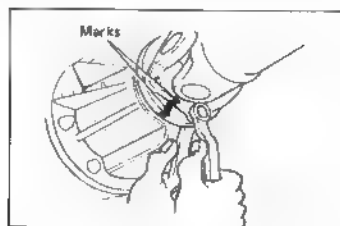
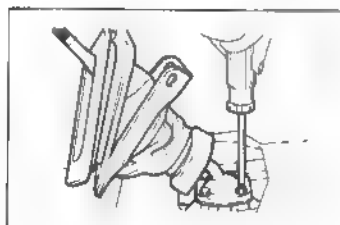
TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Hard to shift or will not shift	Splines on input shaft dirty or burned	Repair as necessary	MT 3
	Transmission faulty	Disassemble and inspect transmission	MT 3
Transmission jumps out of gear	Transmission faulty	Disassemble and inspect transmission	MT 3

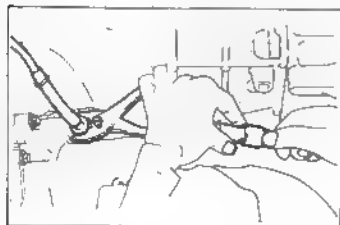
T50 TRANSMISSION

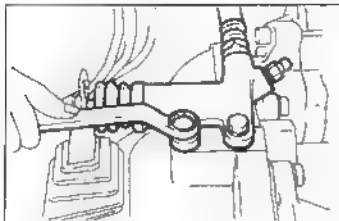
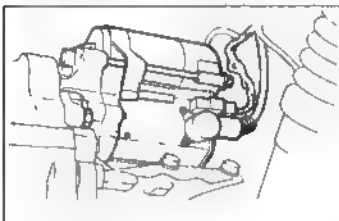
REMOVAL OF TRANSMISSION

1. REMOVE NEGATIVE BATTERY TERMINAL WIRE
2. TURN DISTRIBUTOR
 - (a) Loosen the bolt.
 - (b) Turn the distributor so it does not strike against the dash panel
3. REMOVE CONSOLE BOX
4. REMOVE SHIFT LEVER FROM INSIDE OF VEHICLE
5. RAISE VEHICLE AND DRAIN TRANSMISSION OIL
CAUTION: Be sure the vehicle is securely supported.
6. DISCONNECT PROPELLER SHAFT FLANGE FROM FLANGE ON DIFFERENTIAL
 - (a) Place matchmarks on the flanges.
 - (b) Remove the four bolts and nuts.

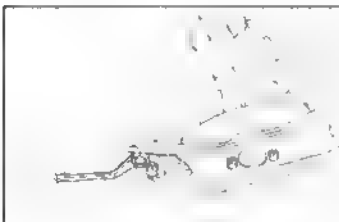


7. REMOVE CENTER SUPPORT BEARING FROM BODY (3-Joint Type)
8. REMOVE PROPELLER SHAFT
 - (a) Pull the yoke from the transmission.
 - (b) Insert SST in the transmission to prevent oil leakage. SST 09325-12010
9. REMOVE EXHAUST PIPE CLAMP BOLT
10. REMOVE SPEEDOMETER CABLE
11. DISCONNECT BACK-UP LIGHT SWITCH CONNECTOR

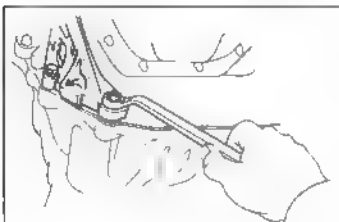


**12. REMOVE CLUTCH RELEASE CYLINDER****13. REMOVE STARTER**

- (a) Disconnect the two wires from the starter.
- (b) Remove the two bolts and the starter

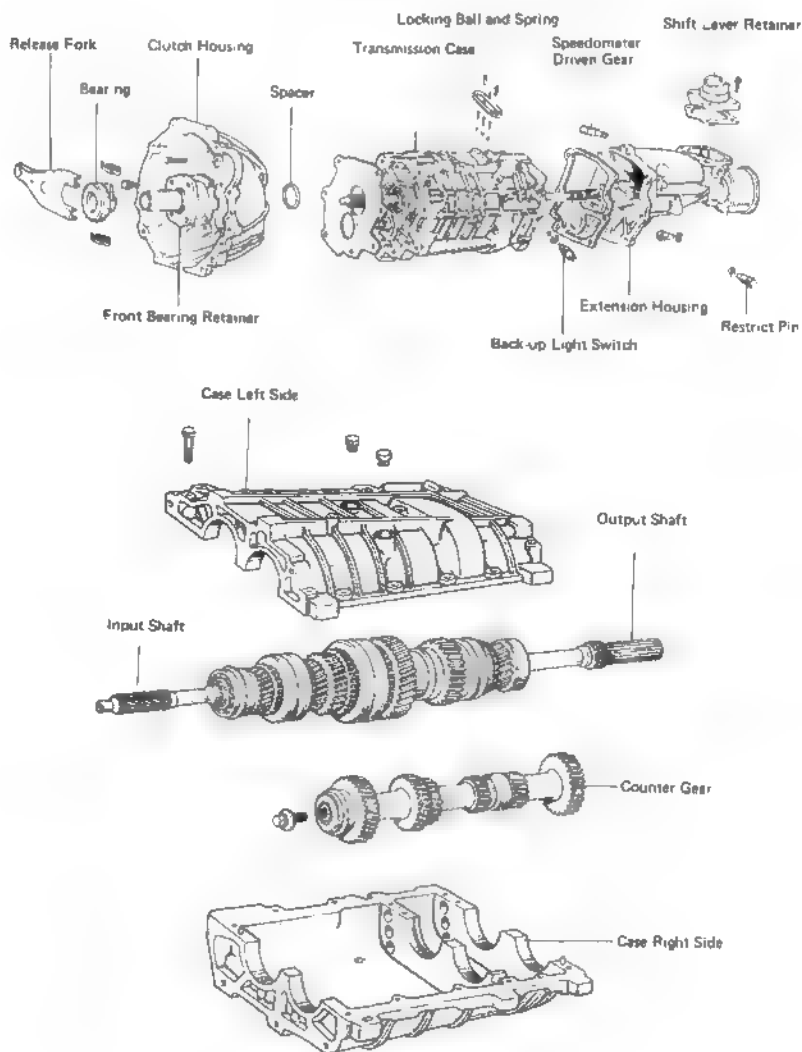
**14. JACK UP TRANSMISSION SLIGHTLY**

Raise the transmission enough to remove the weight from the rear support

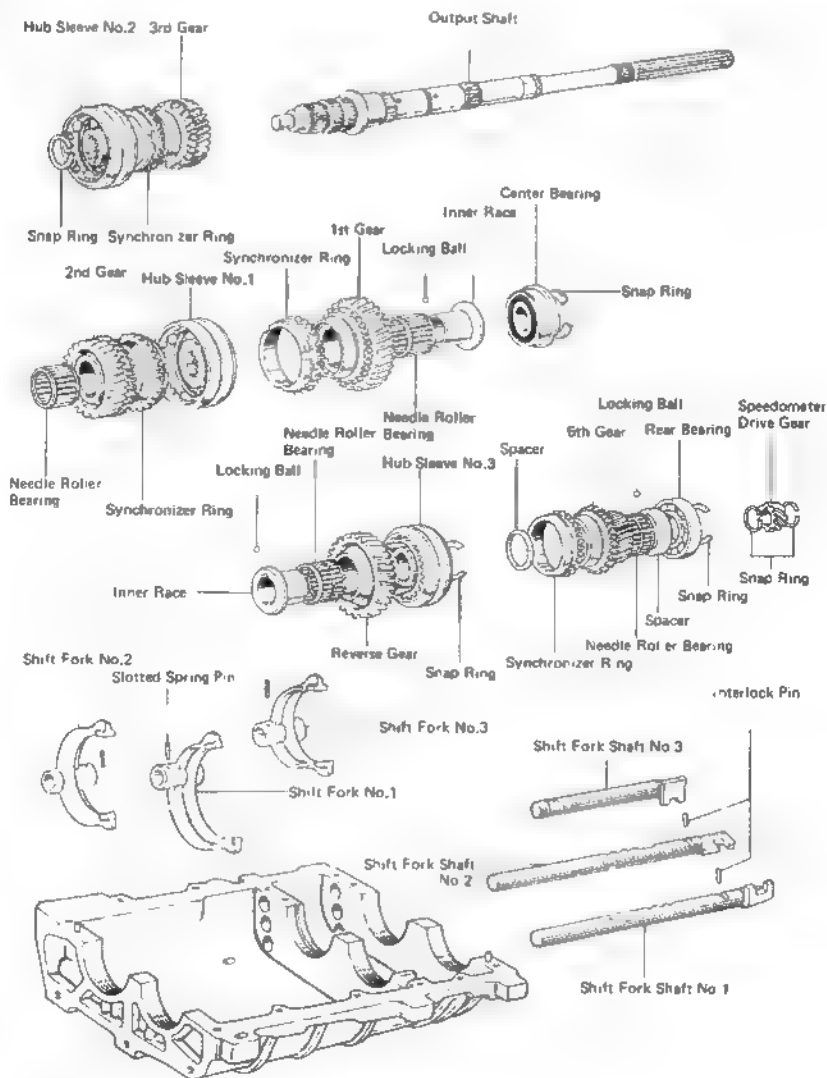
15. REMOVE ENGINE REAR MOUNTING**16. REMOVE STIFFENER PLATE AND TRANSMISSION BOLTS****17. REMOVE TRANSMISSION ASSEMBLY**

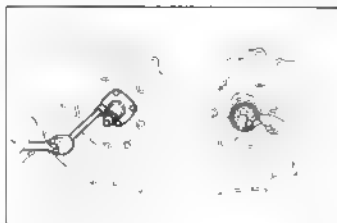
Pull out the transmission down and toward the rear.

COMPONENTS



COMPONENTS (Cont'd)





DISASSEMBLY OF TRANSMISSION

(See page MT-5, B)

1. REMOVE BACK-UP LIGHT SWITCH, SPEEDOMETER DRIVEN GEAR, SHIFT LEVER RETAINER, RESTRICT PINS, CLUTCH RELEASE BEARING AND FORK

2. REMOVE CLUTCH HOUSING FROM TRANSMISSION CASE

- (a) Remove the front bearing retainer
- (b) Remove the spacer
- (c) Remove the clutch housing

3. REMOVE EXTENSION HOUSING

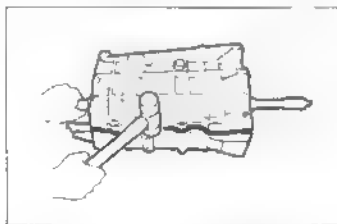
Remove the six bolts and pull off the extension housing

4. REMOVE LOCKING BALLS AND SPRINGS

- (a) Remove the case cover.
- (b) Using a magnetic finger, remove the three locking balls and springs.

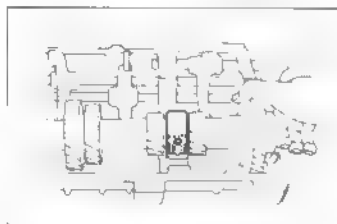
5. REMOVE LEFT CASE FROM RIGHT CASE

Separate the left case from the right case by tapping the projection with a plastic hammer



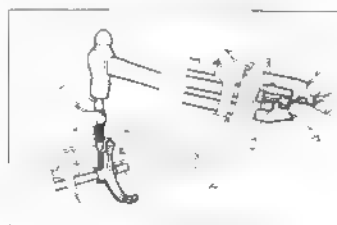
6. REMOVE INPUT AND OUTPUT SHAFT FROM RIGHT CASE

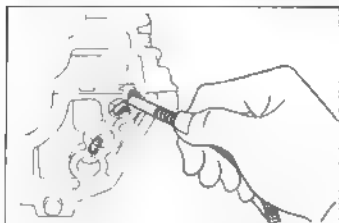
7. REMOVE COUNTER GEAR FROM RIGHT CASE



8. REMOVE SLOTTED SPRING PIN FROM SHIFT FORK AND FORK SHAFT

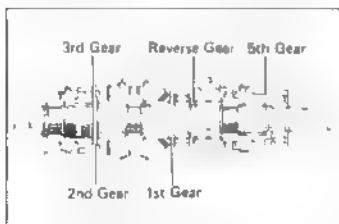
- (a) Using a punch and hammer, drive out the pin in the shift fork No. 1 through the hole in the case.
- (b) Drive out the pin in the shift fork No. 2 and No. 3.
- (c) Pull out the fork shaft No. 1, 2 and 3 by setting each to the neutral position





9. REMOVE INTERLOCK PIN

Remove the two interlock pins.



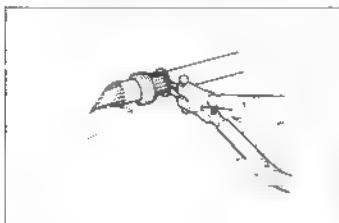
10. MEASURE EACH GEAR THRUST CLEARANCE ON OUTPUT SHAFT

Using feeler gauges, check the thrust clearance of each gear

	Gear thrust clearance		mm (in.)
Gear	STD		Limit
1st	0.150 - 0.275	(0.0059 - 0.0108)	0.5 (0.020)
2nd	0.150 - 0.250	(0.0059 - 0.0098)	0.5 (0.020)
3rd	0.150 - 0.300	(0.0059 - 0.0118)	0.6 (0.024)
5th	0.100 - 0.930	(0.0039 - 0.0366)	1.0 (0.039)
Reverse	0.200 - 0.325	(0.0078 - 0.0128)	0.6 (0.024)

11. REMOVE SPEEDOMETER DRIVE GEAR

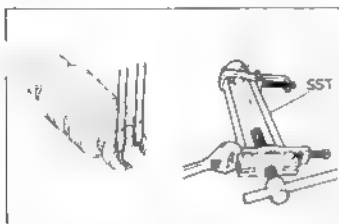
- Using snap ring pliers, remove the snap ring.
- Remove the speedometer drive gear from the output shaft.
- Remove the other snap ring.



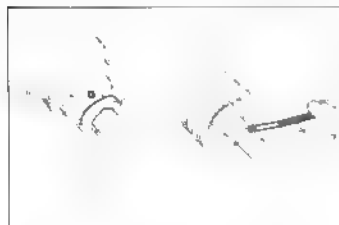
12. REMOVE SNAP RING, REAR BEARING, SPACER, NEEDLE ROLLER BEARING, FIFTH GEAR, SYNCHRONIZER RING, SPACER AND LOCKING BALL

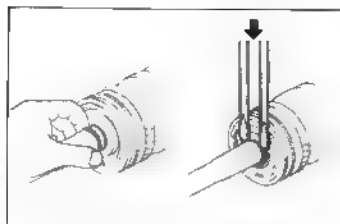
- Remove the snap ring with two screwdrivers and a hammer
- Using SST, remove the rear bearing.

SST 09950-20014



- Remove the spacer for the rear bearing.
- Remove the 5th gear, synchronizer ring and needle roller bearing
- Using a magnetic finger, remove the locking ball

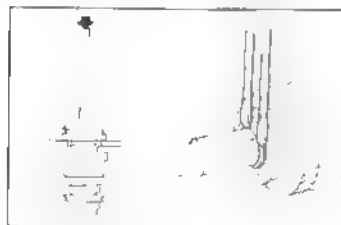




(f) Remove the spacer for the needle roller bearing.

13. REMOVE HUB SLEEVE NO.3 ASSEMBLY, REVERSE GEAR, NEEDLE ROLLER BEARING, INNER RACE, LOCKING BALL AND SNAP RING

(a) Using two screwdrivers and a hammer, remove the snap ring

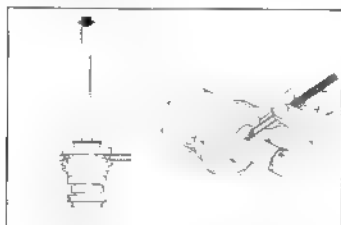


(b) Support the reverse gear, and remove the gear and hub together by pressing down the output shaft

(c) Remove the bearing and inner race.

(d) Using a magnetic finger, remove the locking ball

(e) Using two screwdrivers and a hammer, remove the snap ring.

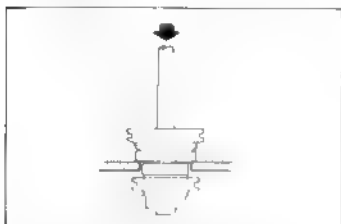


14. REMOVE CENTER BEARING, FIRST GEAR, SYNCHRONIZER RING, NEEDLE ROLLER BEARING, INNER RACE AND LOCKING BALL

(a) Support the 1st gear, and remove the gear and the bearing together by pressing down the output shaft

(b) Remove the synchronizer ring.

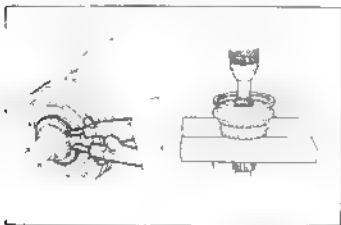
(c) Remove the locking ball



15. REMOVE NO. 1 HUB SLEEVE ASSEMBLY, SYNCHRONIZER RING, SECOND GEAR AND NEEDLE ROLLER BEARING

(a) Support the 2nd gear and remove it and the hub together by pressing down the output shaft

(b) Remove the needle roller bearing.

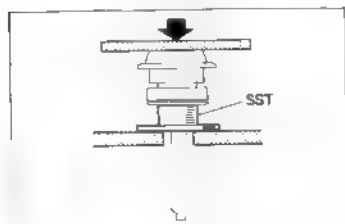
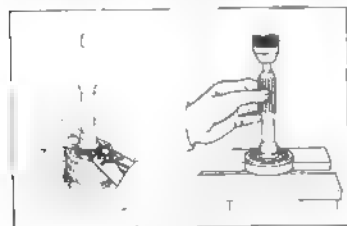
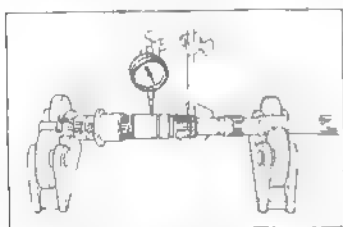
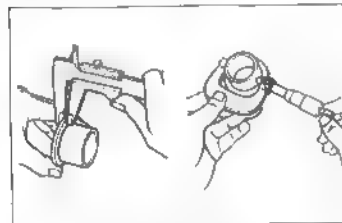
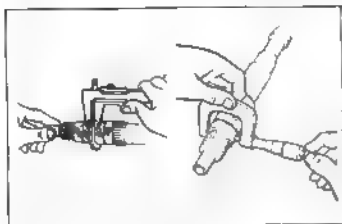


16. REMOVE SNAP RING

Using snap ring pliers, remove the snap ring.

17. REMOVE NO. 2 HUB SLEEVE ASSEMBLY, SYNCHRONIZER RING AND THIRD GEAR

Support the 3rd gear, and remove it and the hub together by pressing down the output shaft.



INSPECTION OF TRANSMISSION COMPONENTS

1. INSPECT OUTPUT SHAFT AND INNER RACES

- Inspect the output shaft and inner races for wear or damage.
- Using calipers, measure the thickness of the output shaft flange.

Minimum thickness: 4.0 mm (0.157 in.)

- Using a micrometer, measure the outer diameter of the shaft bushing surface.

Minimum diameter: 37.8 mm (1.488 in.)

- Using calipers, measure the thickness of each race flange.

Minimum all gear race: 3.8 mm (0.150 in.)

- Using a micrometer, measure the outer diameter of each race.

Minimum 1st and reverse gear race diameter:
36.85 mm (1.4508 in.)

- Using a dial indicator, check the shaft runout.

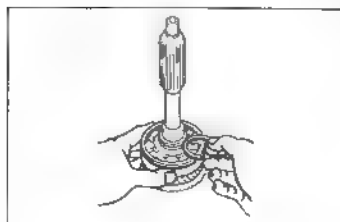
Maximum runout: 0.06 mm (0.0024 in.)

2. IF NECESSARY, REPLACE INPUT SHAFT BEARING

- Using snap ring pliers, remove the snap rings.
- Using a press, remove the bearing.

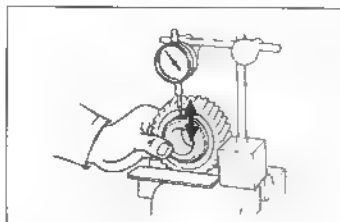
- Using a press and SST, install the new bearing.
- SST 09316-60010

NOTE: Make sure the outer race snap ring groove is positioned toward the front.



- (d) Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness	mm (in.)
A	2.35 - 2.40	(0.0925 - 0.0945)
B	2.40 - 2.45	(0.0945 - 0.0965)
C	2.45 - 2.50	(0.0965 - 0.0984)
D	2.50 - 2.55	(0.0984 - 0.1004)
E	2.55 - 2.60	(0.1004 - 0.1024)



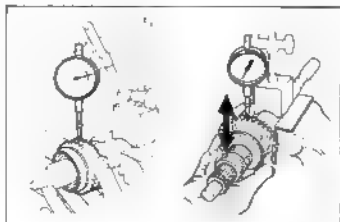
3. CHECK OIL CLEARANCE OF FIRST, FIFTH AND REVERSE GEARS

Using a dial indicator, measure the oil clearance between the gear and inner race with the needle roller bearing installed.

Standard clearance:

1st gear	0.009 - 0.060 mm (0.0004 - 0.0024 in.)
5th gear	0.010 - 0.050 mm (0.0004 - 0.0020 in.)
Reverse gear	0.070 - 0.120 mm (0.0028 - 0.0047 in.)

Maximum clearance: 0.150 mm (0.0059 in.)



4. CHECK OIL CLEARANCE OF SECOND AND THIRD GEARS

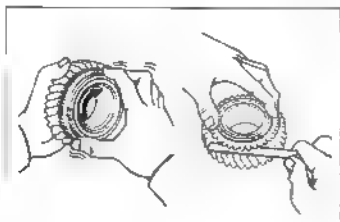
Using a dial indicator, measure the oil clearance between the gear and output shaft.

Standard clearance:

2nd gear	0.009 - 0.060 mm (0.0004 - 0.0024 in.)
3rd gear	0.060 - 0.101 mm (0.0024 - 0.0040 in.)

Maximum clearance:

2nd gear	0.150 mm (0.0059 in.)
3rd gear	0.200 mm (0.0079 in.)

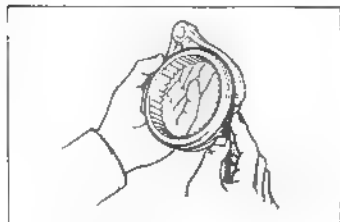


5. INSPECT SYNCHRONIZER RINGS

- (a) Turn the ring and push it in to check the braking action.
- (b) Measure the clearance between the synchronizer ring back and the gear spline end.

Standard clearance: 1.0 - 2.0 mm (0.039 - 0.079 in.)

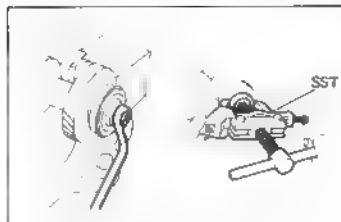
Minimum clearance: 0.8 mm (0.031 in.)



6. INSPECT SHIFT FORK AND HUB SLEEVE

- (a) Check the contact surfaces for wear or damage.
- (b) Measure the clearance between the hub sleeve and the shift fork.

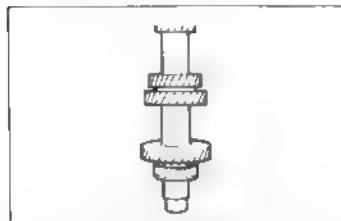
Maximum clearance: 0.8 mm (0.031 in.)



7. IF NECESSARY, REPLACE COUNTER GEAR FRONT BEARING

- Loosen the bolt and remove it and the lock plate
- Using snap ring pliers, remove the snap ring.
- Using SST, remove the front bearing.

SST 00950-20014

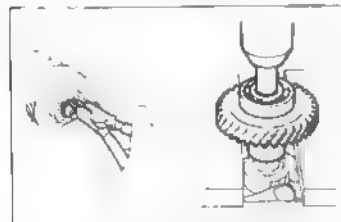


- Using a socket wrench, support the front bearing inner race, and press in the counter shaft.

- Install the snap ring.

- Install the lock plate and tighten the bolt

Torque: 375 kg-cm (27 ft-lb)



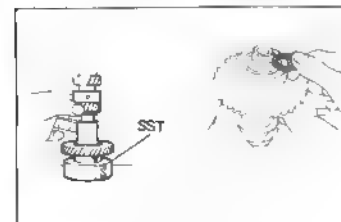
8. IF NECESSARY, REPLACE REAR BEARING, FIFTH GEAR, REVERSE GEAR AND CENTER BEARING

- Using snap ring pliers, remove the snap ring.
- Using a press and 12-mm socket wrench, press out the rear bearing and 5th gear.



- Remove the reverse gear and center bearing.

- Install the center bearing and reverse gear



- Using a press and SST, install the rear bearing and 5th gear

SST 09515-20010

NOTE: Lift the reverse gear to the upper side, and press in the bearing and 5th gear

- Select a snap ring that will allow minimum axial play and install it on the shaft.

Mark	Thickness		mm (in.)
1	2.00	2.05	(0.0787 - 0.0807)
2	1.80	1.85	(0.0709 - 0.0728)
3	1.60	1.65	(0.0630 - 0.0650)



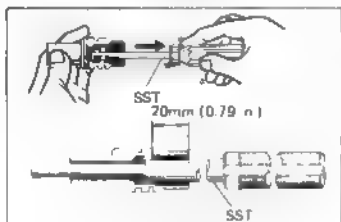
9. INSPECT REVERSE IDLER GEAR

- (a) Before removing the reverse idler gear, measure the thrust clearance.

Standard clearance: 0.05 – 0.50 mm
(0.0020 – 0.0197 in.)

Maximum clearance: 1.0 mm (0.039 in.)

- (b) Check the idler gear and shaft for wear or damage.



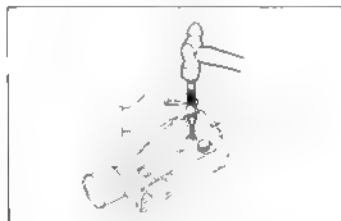
10. IF NECESSARY REPLACE OIL SEAL

- (a) Using SST, remove the seal

SST 09921-00010

- (b) Using SST, install a new seal

SST 09201-60011



11. IF NECESSARY, REPLACE REVERSE RESTRICT PIN

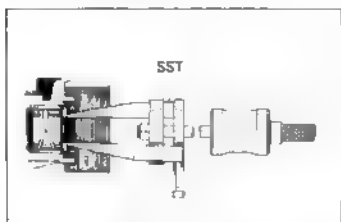
- (a) Remove the plug with a hexagon wrench

- (b) Drive out the slotted spring pin with a pin punch and remove the reverse restrict pin

- (c) Apply liquid sealer to the plug.

- (d) Tighten the plug

Torque: 130 kg-cm (9 ft-lb)

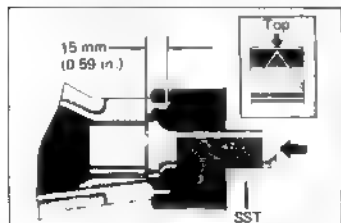


12. IF NECESSARY, REPLACE OIL SEAL AND BUSHING

- (a) Using SST, remove the oil seal

SST 09308 00010

09308 10010 with output shaft installed



- (b) Heat the extension housing end to 80 – 100°C (175 – 212°F) in an oil bath

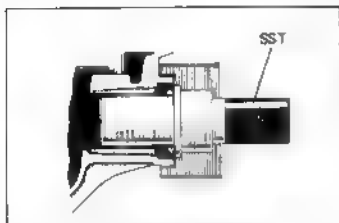
- (c) Using SST, remove the bushing

SST 09307 12010

- (d) Using SST, install the new bushing.

SST 09307-12010

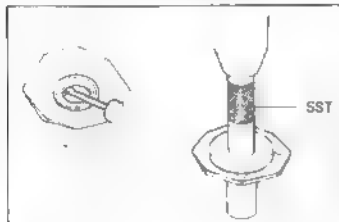
NOTE: The bushing oil hole is positioned upward



(e) Using SST, drive in the new oil seal

SST 09325-12010

(f) Apply MP grease to the oil seal



13. IF NECESSARY, REPLACE FRONT BEARING OIL SEAL

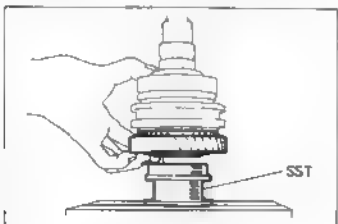
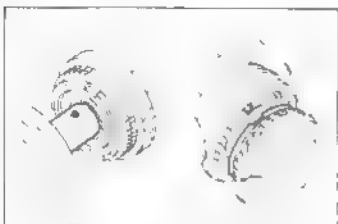
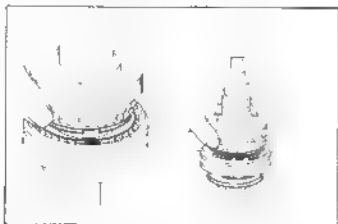
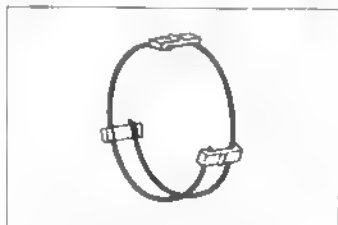
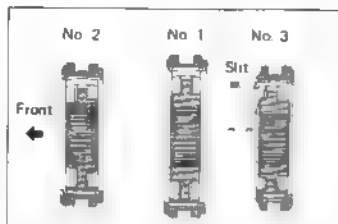
(a) Using a screwdriver, pry out the oil seal.

(b) Using SST, press in the new oil seal

SST 09223-22010

Oil seal depth: 2.5 mm (0.098 in.)

(c) Apply MP grease to the oil seal



ASSEMBLY OF TRANSMISSION

(See page MT-5, 6)

1. ASSEMBLE EACH CLUTCH HUB AND SLEEVE

- (a) Install the clutch hub and shifting keys to the hub sleeve

NOTE Be careful not to install them backwards.

- (b) Install the shifting key springs under the keys

NOTE: Install the key springs positioned so that their ends overlap.

2. INSTALL SECOND GEAR AND CLUTCH HUB NO. 1

- (a) Apply MP grease to the shaft
 (b) Install the needle roller bearing
 (c) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.
 (d) Using a press, install the 2nd gear and clutch hub No 1

3. INSTALL LOCKING BALL AND FIRST GEAR ASSEMBLY

- (a) Install the locking ball in the shaft
 (b) Apply MP grease to the bearing
 (c) Assemble the 1st gear, synchronizer ring, needle roller bearing and bearing inner race
 (d) Fit the inner race groove securely over the locking ball
 (e) Install the assembly on the output shaft with the synchronizer ring slots aligned with the shifting keys.

4. INSTALL CENTER BEARING

Using a press and SST, install the center bearing on the output shaft.

SST 09316-80010

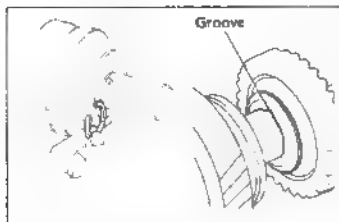
CAUTION Support the 1st gear and inner race by hand.

NOTE: The flange should be positioned toward the rear

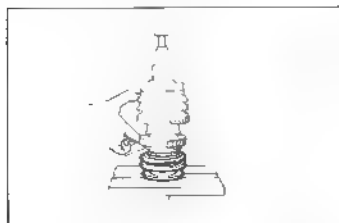
5. INSTALL SNAP RING

Select a snap ring, which will allow 0–0.1 mm (0–0.004 in.) axial play and install it on the shaft.

Mark	Thickness	mm (in.)	Mark	Thickness	mm (in.)
a	2.70–2.75 (0.1063–0.1083)		g	2.95–3.00 (0.1161–0.1181)	
b	2.75–2.80 (0.1083–0.1102)		h	3.00–3.06 (0.1181–0.1201)	
d	2.80–2.85 (0.1102–0.1122)		j	3.05–3.10 (0.1201–0.1220)	
e	2.85–2.90 (0.1122–0.1142)		k	3.10–3.15 (0.1220–0.1240)	
f	2.90–2.95 (0.1142–0.1161)		i	3.15–3.20 (0.1240–0.1260)	

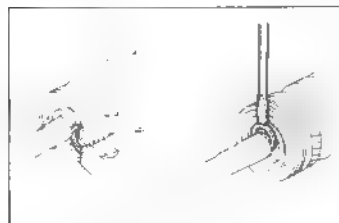
**6. INSTALL LOCKING BALL AND REVERSE GEAR**

- Install the locking ball in the shaft.
- Place the inner race and roller bearing in reverse gear.
- Fit the inner race groove securely over the locking ball when installing the reverse gear on the output shaft.

**7. INSTALL CLUTCH HUB NO. 3**

Using a press, install the clutch hub on the output shaft.

CAUTION: Support the reverse gear by hand.

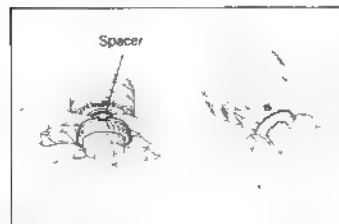
**8. INSTALL SNAP RING**

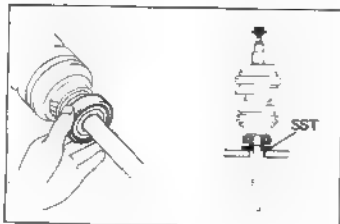
Select a snap ring which will allow 0–0.1 mm (0–0.004 in.) axial play

Mark	Thickness	mm (in.)	Mark	Thickness	mm (in.)
A	2.60–2.65 (0.1024–0.1043)		J	3.00–3.05 (0.1181–0.1201)	
B	2.65–2.70 (0.1043–0.1063)		K	3.05–3.10 (0.1201–0.1220)	
C	2.70–2.75 (0.1063–0.1083)		L	3.10–3.15 (0.1220–0.1240)	
D	2.75–2.80 (0.1083–0.1102)		M	3.15–3.20 (0.1240–0.1260)	
E	2.80–2.85 (0.1102–0.1122)		N	3.20–3.25 (0.1260–0.1280)	
F	2.85–2.90 (0.1122–0.1142)		P	3.25–3.30 (0.1280–0.1299)	
G	2.90–2.95 (0.1142–0.1161)		O	3.30–3.35 (0.1299–0.1319)	
H	2.95–3.00 (0.1161–0.1181)				

9. INSTALL FIFTH GEAR AND SPACER

- Install the spacer for the needle roller bearing.
- Place the synchronizer ring on the gear.
- Place the roller bearing in the gear.
- Install the 5th gear on the output shaft with the synchronizer ring slots aligned with the shifting keys.
- Install the locking ball in the shaft.
- Fit the spacer groove securely over the locking ball when installing the spacer on the shaft.



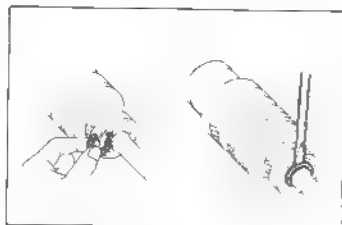
**10. INSTALL REAR BEARING**

Using a press and SST, install the rear bearing on the output shaft.

SST 09515-20010

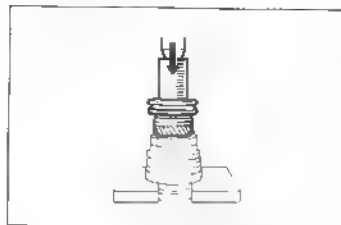
CAUTION: Support the 5th gear and inner race by hand.

NOTE: The ball shield should be positioned toward the rear.

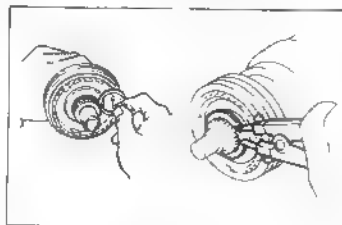
**11. INSTALL SNAP RING**

Select a snap ring which will allow 0 - 0.1 mm (0 - 0.004 in.) axial play

Mark	Thickness	mm (in.)
1	2.35 - 2.40	(0.0925 - 0.0945)
2	2.40 - 2.45	(0.0945 - 0.0965)
3	2.45 - 2.50	(0.0965 - 0.0984)
4	2.50 - 2.55	(0.0984 - 0.1004)
5	2.55 - 2.60	(0.1004 - 0.1024)
6	2.60 - 2.65	(0.1024 - 0.1043)
7	2.65 - 2.70	(0.1043 - 0.1063)

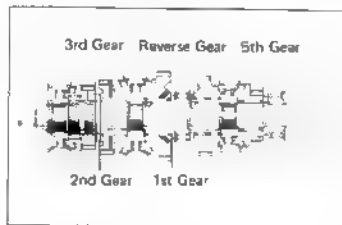
**12. INSTALL THIRD GEAR, SYNCHRONIZER RING AND CLUTCH HUB NO. 2**

- Apply MP grease to the shaft.
- Install the gear and the synchronizer ring on the shaft.
- Install clutch hub No. 2 on the shaft and align the ring slots with keys.
- Using a press and collar, press in clutch hub No. 2.

**13. INSTALL SNAP RING**

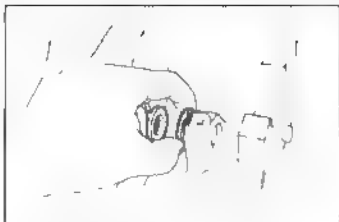
Select a snap ring which will allow 0 - 0.1 mm (0 - 0.004 in.) axial play

Mark	Thickness	mm (in.)
0	1.95 2.00	(0.0768 - 0.0787)
1	2.00 2.05	(0.0787 - 0.0807)
2	2.05 - 2.10	(0.0807 - 0.0827)
3	2.10 2.15	(0.0827 - 0.0846)
4	2.15 2.20	(0.0846 - 0.0866)

**14. MEASURE ALL GEAR THRUST CLEARANCES ON OUTPUT SHAFT**

Using a feeler gauge, measure all gear thrust clearances on the output shaft.

	Gear thrust clearance		mm (in.)
Gear	STD		Lmt
1st	0.150 - 0.275 (0.0059 - 0.0108)		0.6 (0.020)
2nd	0.150 - 0.250 (0.0059 - 0.0098)		0.5 (0.020)
3rd	0.150 - 0.300 (0.0059 - 0.0118)		0.6 (0.024)
5th	0.100 - 0.930 (0.0039 - 0.0366)		1.0 (0.039)
Reverse	0.200 - 0.325 (0.0079 - 0.0128)		0.6 (0.024)

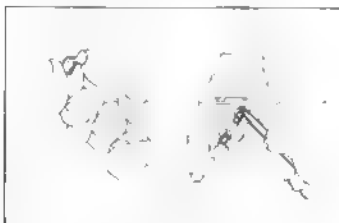


15. INSTALL SPEEDOMETER DRIVE GEAR AND SNAP RINGS

16. INSTALL REVERSE IDLER GEAR AND SHAFT

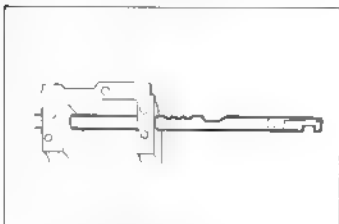
- (a) Fit the projected part of the thrust washer into the case slot
- (b) Install the reverse idler gear and shaft. Torque the bolt.

Torque: 155 kg-cm (11 ft-lb)



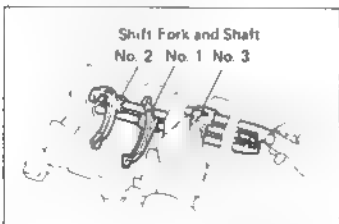
17. INSTALL INTERLOCK PIN

- (a) Apply MP grease to prevent the pins from shifting
- (b) Install two interlock pins in the case.



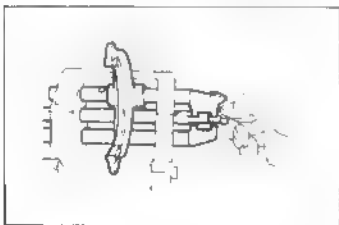
18. INSTALL SHIFT FORK AND SHAFT

- (a) Assemble the shaft with their locking ball grooves positioned toward the top of case.
- (b) Insert each shaft through each fork and push in up to the neutral position.

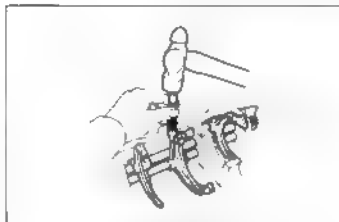


- (c) Install the fork shafts and forks in the following order.

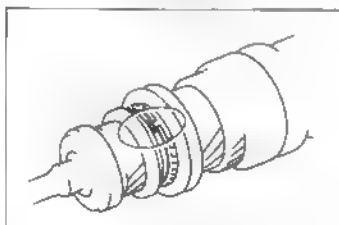
- Fork shaft No. 2 and shift fork No. 2
- Fork shaft No. 1 and shift fork No. 1
- Fork shaft No. 3 and shift fork No. 3



- (d) Shift the fork shaft No. 2 to the 3rd speed position
- (e) Fork shaft No. 1 and No. 3 should not move.

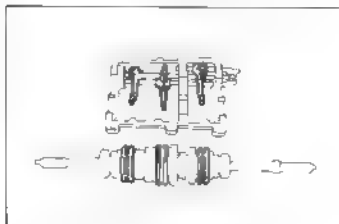


- (f) Align the shaft and fork pin holes, and drive in the slotted spring pins with a pin punch

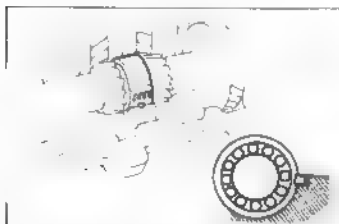


19. INSTALL INPUT SHAFT AND OUTPUT SHAFT

- (a) Apply MP grease to the needle roller bearing.
(b) Place the synchronizer ring on the gear and align the ring slots with the shifting keys.

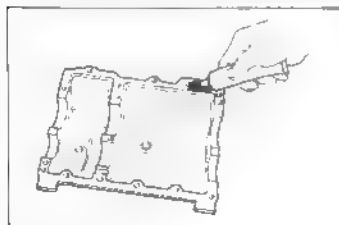


- (c) Set the forks and hubs to the neutral position and assemble the input and output shaft to the case



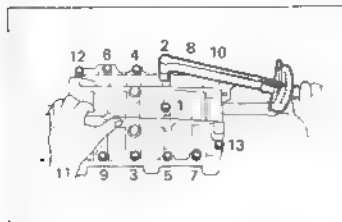
20. INSTALL COUNTER GEAR

- Fit the locking pin into the case groove



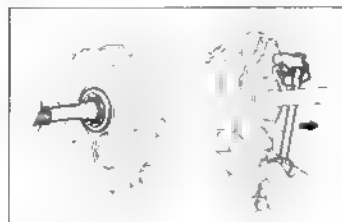
21. INSTALL LEFT CASE

- (a) Clean the case joining surfaces and the places where the bearings fit in.
(b) Apply liquid sealer to the case joining surface



- (c) Apply liquid sealer to the bolt threads, and tighten the bolts equally, a little at a time, in the numerical order shown so as to complete the tightening in 3 to 4 passes.

Torque: 200 kg-cm (14 ft-lb)



22. AFTER ASSEMBLING CASE, CHECK FOLLOWING ITEMS

- (a) Turn the input shaft and output shaft and check to see that they turn smoothly.
(b) Check to see that shifting can be made smoothly to all positions.



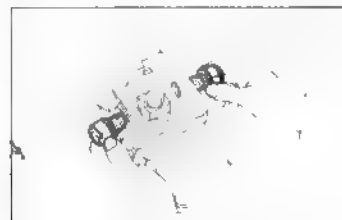
23. INSTALL EXTENSION HOUSING

- (a) Apply liquid sealer to both surfaces of the gasket.
(b) Engage the end of the shift and select levers into No. 2 fork shaft.

CAUTION: Be careful not to damage the oil seal in the extension housing.

- (c) Bolt on the extension housing, and torque the bolts.

Torque: 375 kg-cm (27 ft-lb)



24. INSTALL RESTRICT PINS

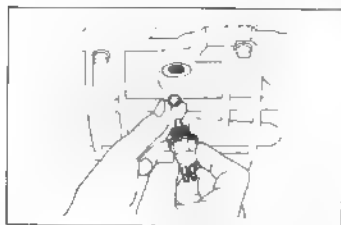
- (a) Install the restrict pins as shown
(b) Torque the restrict pins.

Torque: 400 kg-cm (29 ft-lb)



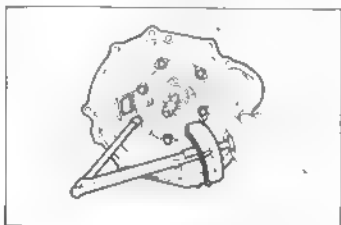
25. INSTALL LOCKING BALLS, SPRINGS AND CASE COVER

- (a) Insert the locking balls and springs into each hole
(b) Install the case cover over the gasket

**26. INSTALL BACK-UP LIGHT SWITCH****27. INSTALL SHIFT LEVER RETAINER**

Install the shift lever retainer and torque the four bolts

Torque: 130 kg-cm (9 ft-lb)

28. INSTALL SPEEDOMETER DRIVEN GEAR**29. INSTALL CLUTCH HOUSING**

(a) Apply liquid sealer to the joining surface

(b) Install the clutch housing.

(c) Install and torque the seven bolts.

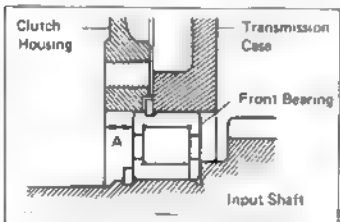
Torque: 375 kg-cm (27 ft-lb)

**30. SELECT FRONT BEARING RETAINER SPACER**

Measure dimension "A" between the input bearing top and clutch housing front bearing retainer surface and refer to the table below to select a spacer of the proper thickness.

NOTE: Insure that the bearing snap ring is securely depressed onto the transmission case when measuring.

Dimension "A" mm (in)	Spacer thickness mm (in)
7.70 - 7.80 (0.3031 - 0.3071)	1.825 - 1.875 (0.0719 - 0.0738)
7.81 - 7.91 (0.3075 - 0.3114)	1.935 - 1.985 (0.0762 - 0.0781)
7.92 - 8.02 (0.3118 - 0.3157)	2.045 - 2.095 (0.0806 - 0.0825)
8.03 - 8.13 (0.3161 - 0.3201)	2.155 - 2.205 (0.0848 - 0.0868)
8.14 - 8.24 (0.3205 - 0.3244)	2.265 - 2.315 (0.0892 - 0.0911)
8.25 - 8.35 (0.3248 - 0.3287)	2.375 - 2.425 (0.0935 - 0.0955)

**31. INSTALL SPACER AND FRONT BEARING RETAINER**

(a) Install the spacer on the input shaft bearing.

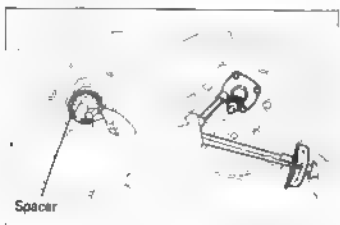
(b) Apply MP grease to the oil seal lip

(c) Install the front bearing retainer

CAUTION: Do not damage the oil seal lip with the spline of the input shaft

(d) Install and torque the four bolts.

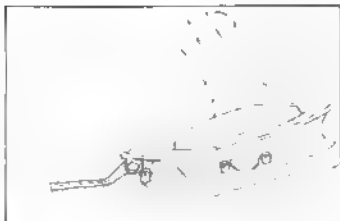
Torque: 185 kg-cm (13 ft-lb)

**32. INSTALL CLUTCH RELEASE FORK AND BEARING**

INSTALLATION OF TRANSMISSION**1. PLACE TRANSMISSION AT INSTALLATION POSITION, AND INSTALL TRANSMISSION MOUNT BOLTS**

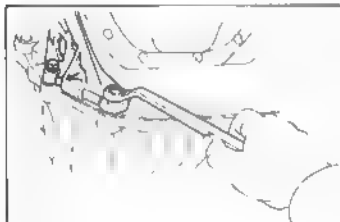
- (a) Align the input shaft spline with the clutch disc, and push the transmission fully into position.
- (b) Install the two set bolts of the upper transmission, and torque the bolts.

Torque: 730 kg-cm (53 ft-lb)

**2. INSTALL ENGINE REAR MOUNTING**

Install and torque the eight bolts.

Torque: 530 kg-cm (38 ft-lb)

**3. INSTALL TRANSMISSION BOLTS AND STIFFENER PLATE**

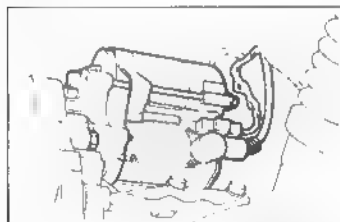
Install and torque the bolts.

Torque: 375 kg-cm (27 ft-lb)

4. INSTALL EXHAUST PIPE BRACKET

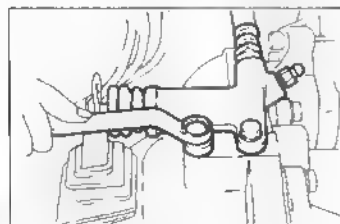
Install and torque the bolt.

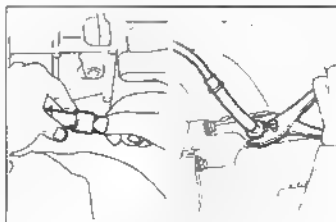
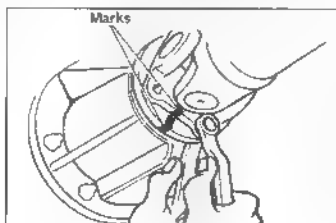
Torque: 375 kg-cm (27 ft-lb)

**5. INSTALL STARTER**

Install the starter, and torque the bolts.

Torque: 300 - 450 kg-cm (22 - 32 ft-lb)

**6. INSTALL CLUTCH RELEASE CYLINDER**

**7. CONNECT BACK-UP LIGHT SWITCH CONNECTOR****8. INSTALL SPEEDOMETER CABLE****9. INSERT YOKE IN TRANSMISSION****10. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON DIFFERENTIAL**

(a) Align the marks on the flanges and connect the flanges with four bolts and nuts.

(b) Torque the bolts and nuts

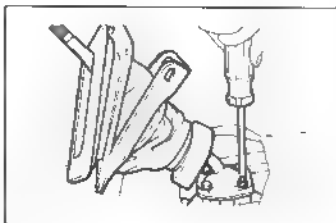
Torque: 350 kg-cm (25 ft-lb)

11. CONNECT CENTER SUPPORT BEARING TO BODY (3-Joint Type)**12. FILL WITH TRANSMISSION OIL**

Oil type : API service GL-4 or GL-5

SAE 90 or 75W-90

Capacity: 1.7 liters (1.8 US qts, 1.5 Imp. qts)

13. CONNECT NEGATIVE BATTERY TERMINAL WIRE**14. INSTALL SHIFT LEVER****15. INSTALL CONSOLE BOX****16. ADJUST IGNITION TIMING (For 4A Engine)**

(a) Connect a timing light to the engine.

(b) Start the engine and run it at idle

(c) Using a timing light, slowly turn the distributor until the timing mark on the crankshaft pulley is aligned with the 5° mark. Tighten the distributor bolt

Ignition timing: 5° BTDC at idle (900 rpm max.)

17. PERFORM ROAD TEST

Check for abnormal noise and smooth operation.

PROPELLER SHAFT

	<i>Page</i>
TROUBLESHOOTING	PR-2
PROPELLER SHAFT	PR-2

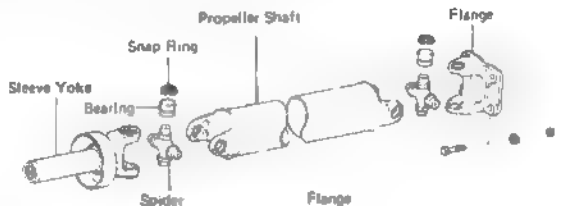
P

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Noise	Sleeve yoke spline worn	Replace sleeve yoke	PR-5
	Center bearing worn	Replace center bearing	PR-3
	Spider bearing worn or stuck	Replace spider bearing (For shell type, replace intermediate shaft and propeller shaft)	PR-5
Vibration	Propeller shaft runout	Replace propeller shaft	PR-3
	Propeller shaft imbalance	Balance propeller shaft	
	Transmission extension housing rear bushing worn	Replace bushing	MT-13
	Sleeve yoke spline stuck	Replace sleeve yoke (For shell type, replace intermediate shaft and propeller shaft)	PR-5

PROPELLER SHAFT
COMPONENTS

2-Joint Solid Type

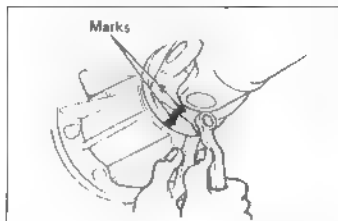


3-Joint Shell Type



3-Joint Cord Coupling Type





REMOVAL OF PROPELLER SHAFT

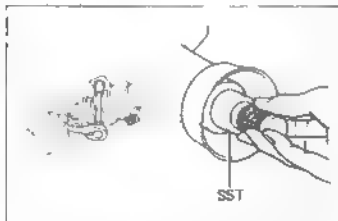
(See page PR-2)

Precautions

Be careful not to grip the propeller shaft tube too tightly in the vise as this will cause deformation.

1. DISCONNECT PROPELLER SHAFT FLANGE FROM FLANGE ON DIFFERENTIAL

- Place matchmarks on the flanges
- Remove the four bolts and nuts.

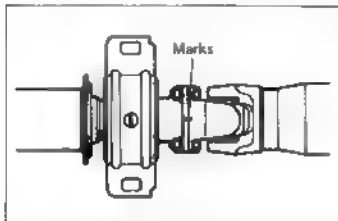


2. REMOVE CENTER SUPPORT BEARING FROM BODY (3-Joint Type)

3. REMOVE PROPELLER SHAFT

- Pull the sleeve yoke from the transmission
- Insert SST in the transmission to prevent oil leakage.

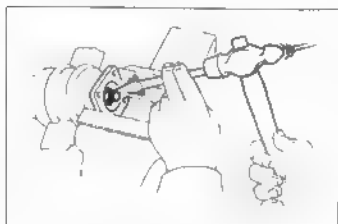
SST 09325 12010 (M/T)
09325 20010 (A/T)



DISASSEMBLY OF PROPELLER SHAFT (3-Joint Type)

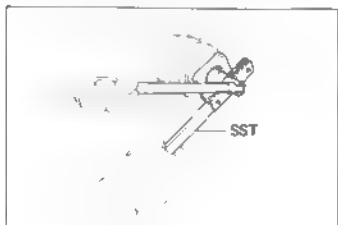
1. SEPARATE PROPELLER SHAFT AND INTERMEDIATE SHAFT

- Place matchmarks on the flanges.
- Remove the four bolts and nuts.

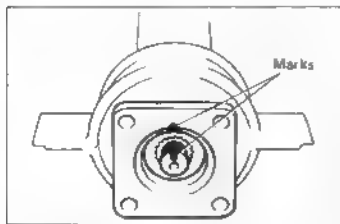


2. REMOVE CENTER SUPPORT BEARING FROM INTERMEDIATE SHAFT

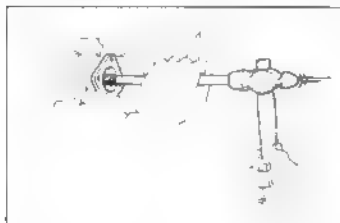
- Using a hammer and chisel, loosen the staked part of the nut



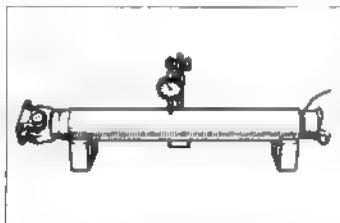
- Using SST to hold the flange, remove the nut
SST 09330 00020



- (c) Place matchmarks on the flange and shaft.



- (d) Clamp the flange in a vise and tap off the shaft.

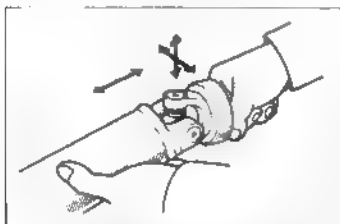


INSPECTION OF PROPELLER SHAFT COMPONENTS

1. INSPECT PROPELLER AND INTERMEDIATE SHAFTS FOR DAMAGE OR RUNOUT

If shaft runout is greater than maximum, replace the shaft.

Maximum runout: 0.8 mm (0.031 in.)



2. INSPECT SPIDER BEARINGS

- (a) Inspect the spider bearings for wear or damage.

- (b) Check the spider bearing axial play by wriggling the yoke while holding the shaft tightly.

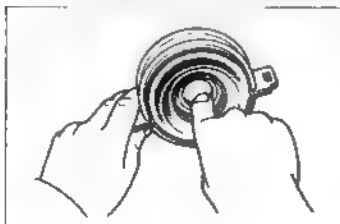
Bearing axial play:

Solid type Less than 0.05 mm (0.0020 in.)

If necessary, replace the spider bearing.

Shell type 0 mm (0 in.)

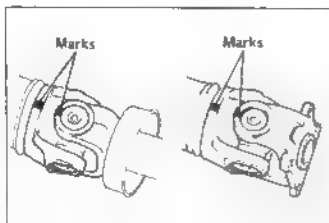
If necessary, replace the propeller shaft.



3. INSPECT CENTER SUPPORT BEARING FOR WEAR OR DAMAGE

Check that the bearing turns freely

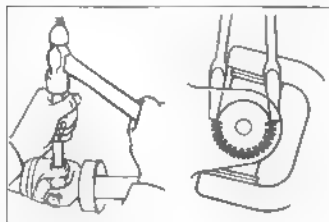
If the bearing is damaged, worn, or does not turn freely, replace it.



REPLACEMENT OF SPIDER BEARING (Solid Type)

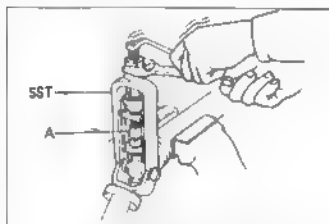
1. PLACE MATCHMARKS ON SHAFT AND FLANGE OR SLEEVE YOKE

NOTE The shell type cannot be disassembled. If necessary, replace the propeller shaft.



2. REMOVE SNAP RINGS

- (a) Slightly tap in the bearing outer races.
- (b) Using two screwdrivers, remove the four snap rings from the grooves.

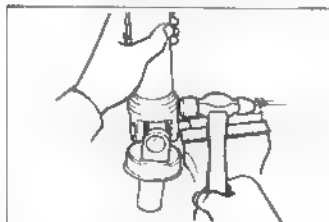


3. REMOVE SPIDER BEARINGS

- (a) Using SST, push out the bearing from the propeller shaft.

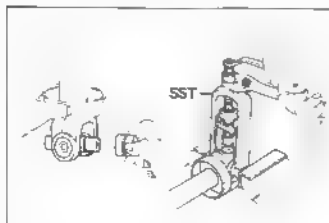
SST 09332 25010

NOTE Sufficiently raise the part indicated by A so that it does not come into contact with the bearing.



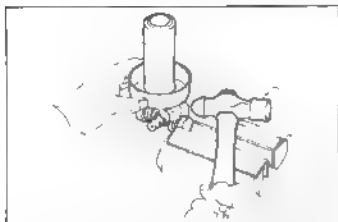
- (b) Clamp the bearing outer race in a vise and tap off the propeller shaft with a hammer.

NOTE: Remove the bearing on the opposite side in the same procedure.



- (c) Install the two removed bearing outer races to the spider.

- (d) Using SST, push out the bearing from the yoke.
- SST 09332 25010



- (e) Clamp the bearing outer race in a vise and tap off the yoke with a hammer.

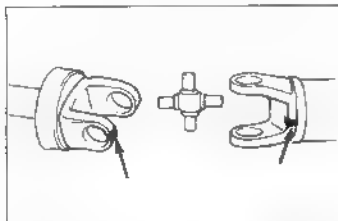
NOTE: Remove the bearing on the opposite side in the same procedure



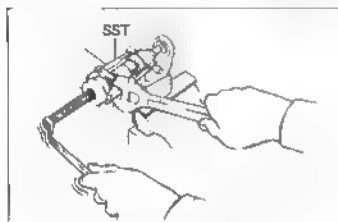
4. INSTALL SPIDER BEARINGS

- (a) Apply MP grease to the spider and bearings.

NOTE: Be careful not to apply too much grease.



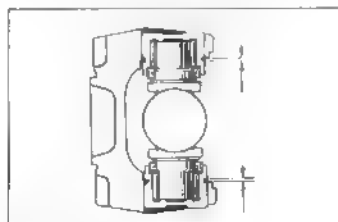
- (b) Align the marks on the yoke and shaft



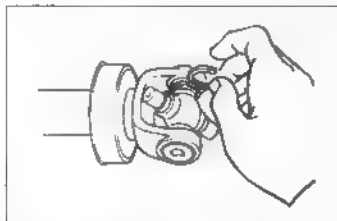
- (c) Fit the new spider in the yoke

- (d) Using SST, install the new bearings on the spider

SST 09332 25010



- (e) Adjust both bearings so that the snap ring grooves are at maximum and equal widths.



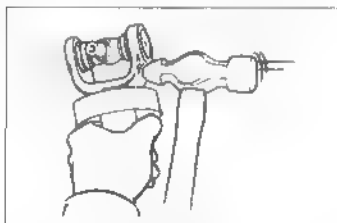
5. INSTALL SNAP RINGS

- (a) Install two snap rings with the same thickness which will allow 0 — 0.05 mm (0 — 0.0020 in.) axial play.

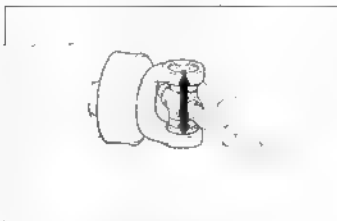
NOTE Do not reuse the snap rings.

Snap ring sizes

Color	Thickness mm (in.)			
None	2 375	2 425	(0.0935	0.0955)
Brown	2 425	2 475	(0.0955	0.0974)
Blue	2 475	2 525	(0.0974	0.0994)
None	2.525	2 575	(0.0994	0.1014)



- (b) Using a hammer, tap the yoke until there is no clearance between the bearing outer race and snap ring.

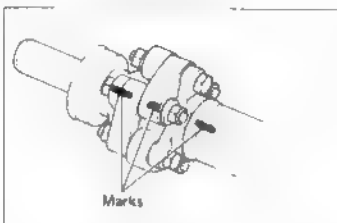


6. CHECK SPIDER BEARING

- (a) Check that the spider bearing moves smoothly
(b) Check the spider bearing axial play

Bearing axial play: Less than 0.05 mm (0.0020 in.)

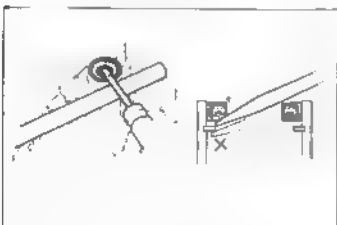
NOTE: Install new spider bearings in the shaft side using the procedure described above



REPLACEMENT OF FLEXIBLE COUPLING (Cord Coupling Type)

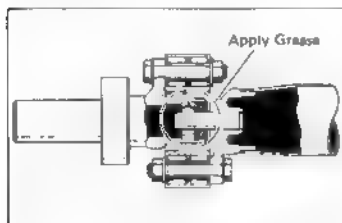
1. SEPARATE SLEEVE YOKE, FLEXIBLE COUPLING AND INTERMEDIATE SHAFT

- (a) Place matchmarks on the sleeve yoke, flexible coupling and intermediate shaft.
(b) Remove the six bolts and nuts.

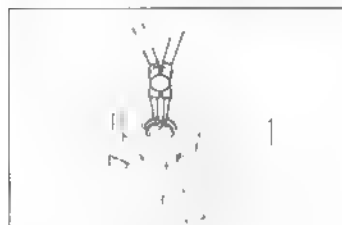


2. REMOVE CENTERING SEAL

Insert a screwdriver between the snap ring and centering seal, and pry off the seal

**3. REMOVE SNAP RING****4. REMOVE CENTERING BALL AND SEAT****5. INSTALL CENTERING BALL AND SEAT**

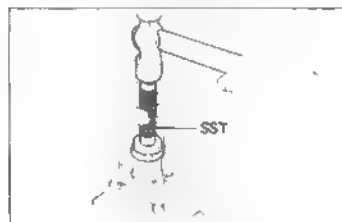
Apply molybdenum disulphide lithium base grease to the areas indicated in the figure.

**6. INSTALL SNAP RING**

Select a snap ring with a thickness which will allow 0–0.05 mm (0–0.0020 in.) axial play

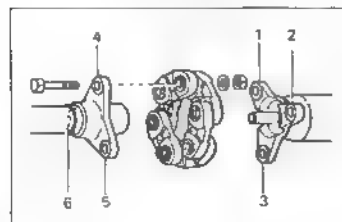
Snap ring sizes

Thickness	mm (in.)
1.40 – 1.44	0.0551 – 0.0567
1.43 – 1.47	0.0563 – 0.0579
1.46 – 1.50	0.0575 – 0.0581
1.48 – 1.53	0.0587 – 0.0602
1.52 – 1.56	0.0598 – 0.0614

**7. INSTALL CENTERING SEAL**

Using SST, install the new centering seal

SST 09608-30021

**8. INSTALL FLEXIBLE COUPLING**

(a) Align the marks on the sleeve yoke, flexible coupling and intermediate shaft

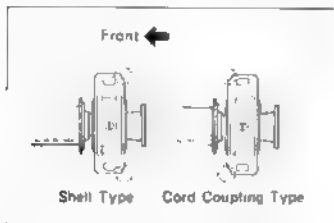
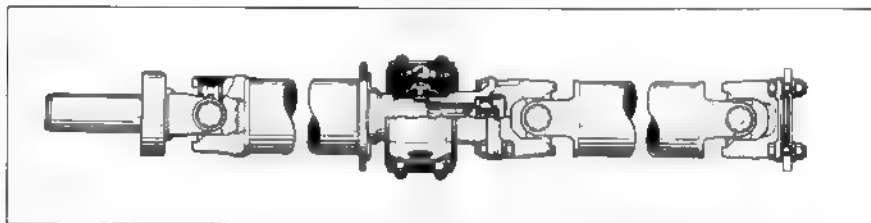
(b) Torque the bolts and nuts

Torque: 900 kg-cm (65 ft-lb)

NOTE: First tighten the three bolts on the intermediate shaft side and then evenly tighten the three bolts on the sleeve flange side

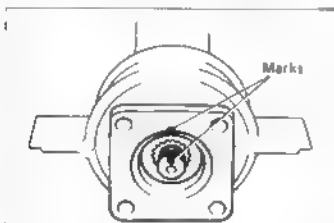
ASSEMBLY OF PROPELLER SHAFT (3-Joint Type)

NOTE: When replacing the flange or propeller shaft, install the new parts facing as shown in the illustration



1. INSTALL CENTER SUPPORT BEARING ON INTERMEDIATE SHAFT

NOTE: Install the center support bearing with the cut-out toward the rear (Shell Type) or the front (Cord Coupling Type)

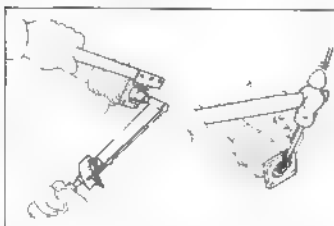


2. INSTALL FLANGE ON INTERMEDIATE SHAFT

(a) Coat the splines of the intermediate shaft with MP

(b) Place the flange on the shaft and align the marks

NOTE: If replacing either the center flange or intermediate shaft, reassemble them so that the front yoke of the intermediate shaft and the rear yoke of the propeller shaft are facing in the same direction.



(c) Using SST to hold the flange, press the bearing into position by tightening down a new nut.

SST 09330-00020

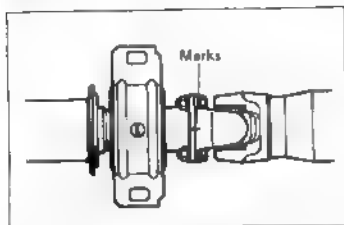
Torque: 1,700 – 2,000 kg-cm (123 – 144 ft-lb)

(d) Loosen the nut.

(e) Torque the nut again.

Torque: 300 kg-cm (22 ft-lb)

(f) Using a hammer and punch, stake the nut.



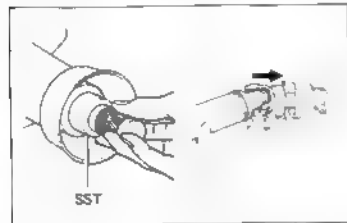
3. INSTALL PROPELLER SHAFT

- (a) Align the marks on the flanges and connect the flanges with four bolts and nuts.

NOTE: If replacing either the center flange or intermediate shaft, reassemble them so that the front yoke of the intermediate shaft and the rear yoke of the propeller shaft are facing in the same direction.

- (b) Torque the bolts and nuts

Torque: 350 kg-cm (25 ft-lb)



INSTALLATION OF PROPELLER SHAFT

(See page PR-2)

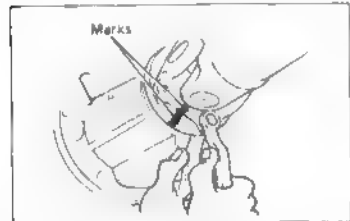
1. INSERT YOKE IN TRANSMISSION

- (a) Remove SST

- (b) Push the yoke into the transmission.

SST 09325 12010 (M/T)

09325 20010 (A/T)

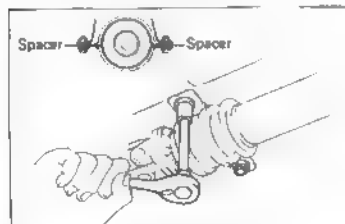


2. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE ON DIFFERENTIAL

- (a) Align the marks on the flanges and connect the flanges with four bolts and nuts.

- (b) Torque the bolts and nuts.

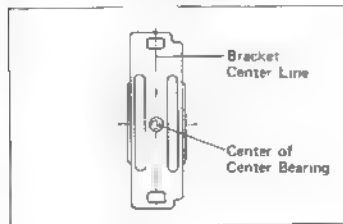
Torque: 350 kg-cm (25 ft-lb)



3. CONNECT CENTER SUPPORT BEARING TO BODY (3-Joint Type)

- (a) Place a height spacer between the body and center support bearing, and install the two mounting bolts finger tight

NOTE: Some vehicles do not have a spacer. In this case, it is not necessary to insert one



- (b) Check that the bearing bracket is at right angles to the propeller shaft. Adjust the bracket if necessary.

- (c) Check that the center line of the center bearing is set to the center line of the bracket when the vehicle is in a no load condition. Adjust the bracket if necessary

- (d) Torque the mounting bolts.

Torque: 375 kg-cm (27 ft-lb)

FRONT AXLE AND SUSPENSION

	Page
TROUBLESHOOTING	FA-2
FRONT WHEEL ALIGNMENT	FA-3
FRONT AXLE HUB	FA-8
FRONT AXLE SHOCK ABSORBER	FA-10
FRONT SUSPENSION	FA-14
Ball Joint	FA-14
Lower Arm	FA-15
Strut Bar	FA-18
Stabilizer Bar	FA-19

FA

TROUBLESHOOTING

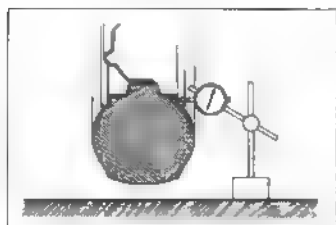
Problem	Possible cause	Remedy	Page
Wanders/pulls	Tires worn or improperly inflated	Replace tire or inflate tires to proper pressure	FA-3
	Alignment incorrect	Check front end alignment	FA-3
	Wheel bearing adjusted too tight	Adjust wheel bearing	FA-8
	Front or rear suspension parts loose or broken	Tighten or replace suspension part	
	Steering linkage loosen or worn	Tighten or replace steering linkage	SR-3
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-11, 33
Bottoming	Vehicle overloaded	Reduce load	
	Springs weak	Replace spring	FA-11
Sways/pitches	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Stabilizer bar bent or broken	Inspect stabilizer bar	FA-18
Front wheel shimmy	Tires worn or improperly inflated	Replace tire or inflate tires to proper pressure	FA-3
	Wheels out of balance	Balance wheels	
	Alignment incorrect	Check front end alignment	FA-3
	Wheel bearings worn or improperly adjusted	Replace or adjust wheel bearings	FA-6, 8
	Ball joints or bushings worn	Inspect ball joints and bushings	FA-14
	Steering linkage loose or worn	Tighten or replace steering linkage	SR-3
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR-11, 33
Abnormal tire wear	Tires improperly inflated	Inflate tires to proper pressure	FA-3
	Alignment incorrect	Check toe-in	FA-3
	Suspension parts worn	Replace suspension parts	

FRONT WHEEL ALIGNMENT

1. MAKE FOLLOWING CHECKS AND CORRECT ANY PROBLEMS

- (a) Check the tires for size, wear, and proper inflation

Correct tire pressure: 1.7 kg/cm² (24 psi)



- (b) Check the wheel runout:

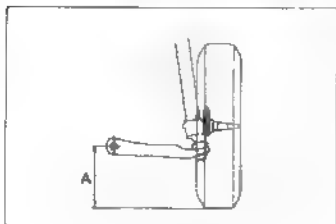
Lateral runout: Less than 1.0 mm (0.039 in.)

- (c) Check the front wheel bearings for looseness.

- (d) Check the front suspension for looseness.

- (e) Check the steering linkage for looseness.

- (f) Check that the front absorbers work properly by using the standard bounce test

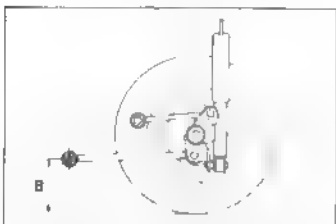


2. MEASURE VEHICLE HEIGHT

Vehicle height mm (in.)

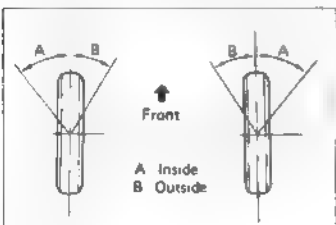
Tire	Front A	Rear B
165 SR13	236 (9.29)	238 (9.37)
185/70SR13	237 (9.33)	239 (9.41)
185/70HRT13	237 (9.33)	239 (9.41)

If height of the vehicle is not as specified, try to level the vehicle by shaking it down. If the height of the vehicle is still not correct, check for bad springs and worn or loose suspension parts.

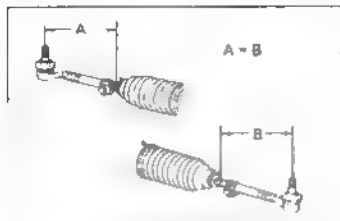


3. ADJUST WHEEL ANGLE

Remove the caps of the knuckle/stopper bolts and check the steering angles.



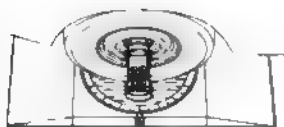
	Wheel angle	w/P.S	w/o P.S
Max	Inside wheel	38°30' ± 2°	38°30' ± 2°
	Outside wheel (Reference)	33°	33°30'
	at 20°		
	Inside wheel	21°	
	Outside wheel	20°	



If steering angles differ from the standard specifications, check to see if the lengths of the left and right tie rods are the same.

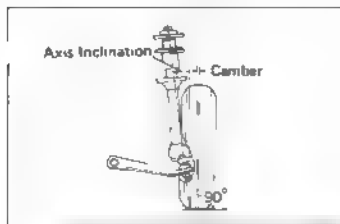
NOTE: If the tie rod lengths are not equal, the steering angle cannot be adjusted properly.

If the tie rod lengths were changed to adjust the steering angle, reinspect the toe-in.



4. INSTALL WHEEL ALIGNMENT EQUIPMENT

Follow the specific instructions of the equipment manufacturer.

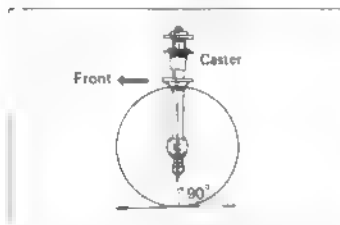


5. INSPECT CAMBER AND STEERING AXIS INCLINATION

Camber	Australia	Others
Inspection standard	$15' \pm 45'$	$20' \pm 45'$
Adjustment standard	15 ± 30	$20' \pm 30'$
Left-right error	30'	30'

Steering axis inclination	Australia	Others
Inspection standard	$8^{\circ}50' \pm 45'$	$8^{\circ}45' \pm 45'$
Adjustment standard	$8^{\circ}50' \pm 30'$	$8^{\circ}45' \pm 30'$
Left-right error	30'	30'

If camber or steering axis inclination checks are out of tolerance, inspect and replace damaged or worn front suspension parts.



6. ADJUST CASTER

Caster	4A 4A-C	4A GE	w/P S
Inspection standard	$2^{\circ}45' \pm 45'$	$3^{\circ}40' \pm 45'$	$3^{\circ}40' \pm 45'$
Adjustment standard	$2^{\circ}45' \pm 30'$	$3^{\circ}40' \pm 30'$	$3^{\circ}40' \pm 30'$
Left-right error	30'	30'	30'

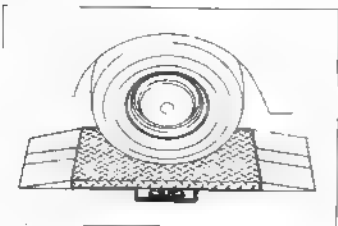
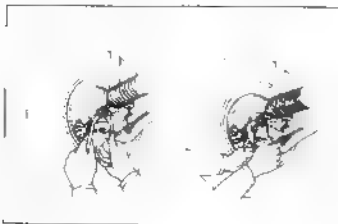
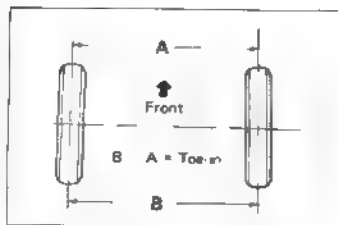
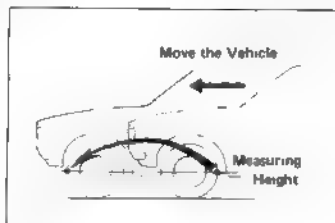
If caster is out of tolerance, adjust the caster with the stacked nuts of the strut bar.

Torque: 925 kg-cm (87 ft-lb)

NOTE: Decrease caster by lengthening the strut bar. Increase caster by shortening the strut bar. One turn of the nut is equal to 8'.

If caster still cannot be adjusted within limits, inspect and replace any damaged or worn front suspension parts.





7. ADJUST TOE-IN

- Make sure the wheels are positioned straight ahead
- Mark the center of each rear tread and measure the distance between the marks on the right and left tires.
- Advance the vehicle until the marks on the rear side of the tires come to the front.

NOTE: The toe-in should be measured at the same point on the tire and at the same level.

- Measure the distance between the marks on the front side of the tires.

Toe-in:

Inspection standard $1 \pm 4 \text{ mm } (0.04 \pm 0.16 \text{ in.})$

Adjustment standard $1 \pm 1 \text{ mm } (0.04 \pm 0.04 \text{ in.})$

- Remove the rack boot clips and loosen the clamp bolts.
- Adjust the toe-in by turning the left and right rack end and equal amount.

NOTE: Make sure that the tie rods are the same length.

- Tighten the clamp bolts and torque them

Torque: 175 kg-cm (13 ft-lb)

NOTE: Make sure that the tie rod is perpendicular with the stud.

- Install the rack boot clips.

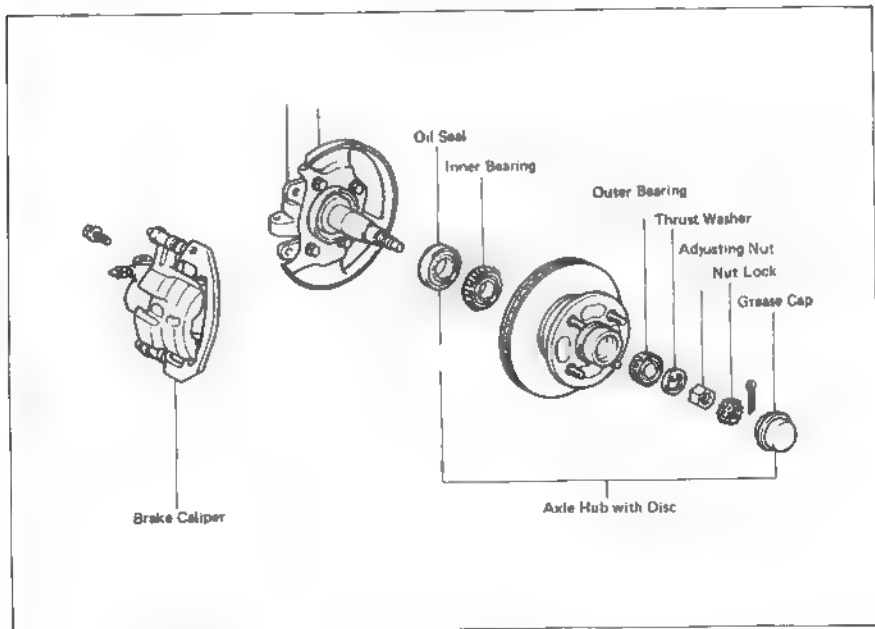
8. INSPECT SIDE SLIP WITH SIDE SLIP TESTER

Side slip limit.

Less than 3.0 mm/m (0.118 in./3.3 ft)

If the side slip exceeds the limit, the toe-in or other front wheel alignment may not be correct

FRONT AXLE HUB COMPONENTS

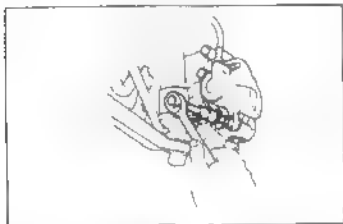


DISASSEMBLY OF FRONT AXLE HUB

1. REMOVE DISC BRAKE CALIPER

- Remove the two caliper mounting bolts and remove the caliper from the dust cover.
- Suspend the caliper with a cord

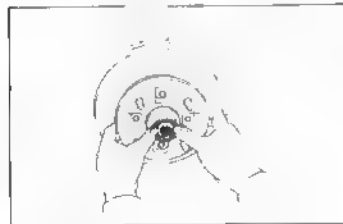
NOTE: Do not disconnect the brake hose.

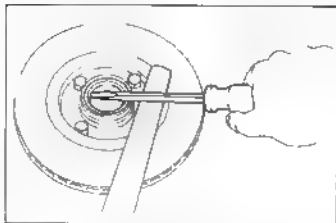


2. REMOVE AXLE HUB WITH DISC

- Remove the grease cap, cotter pin, nut lock and adjusting nut.
- Remove the hub and disc together with the outer bearing and thrust washer

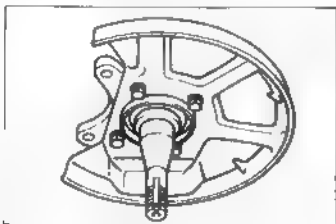
NOTE: Be careful not to drop the outer bearing.





3. REMOVE INNER BEARING AND OIL SEAL

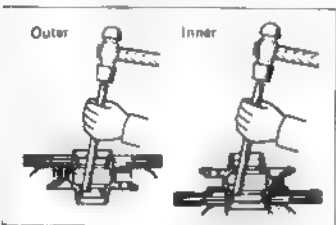
- (a) Using a screwdriver, pry out the oil seal
- (b) Remove the inner bearing from the hub.



INSPECTION AND REPAIR OF FRONT AXLE HUB

1. INSPECT SPINDLE

Using a magnetic flaw detector or flaw detecting penetrant, check for damage or cracks

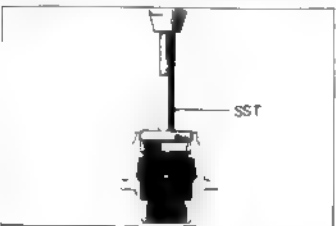


2. INSPECT BEARING

Clean the bearings and outer races and inspect them for wear or damage

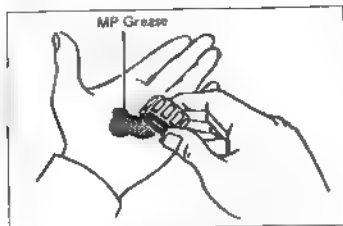
3. REPLACE BEARING OUTER RACE

- (a) Using a brass bar and hammer, drive out the bearing outer race



- (b) Using SST, carefully drive in the new bearing outer race.

SST 09608-20011

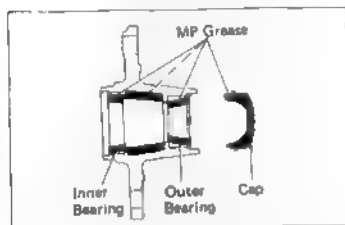


INSTALLATION OF FRONT AXLE HUB

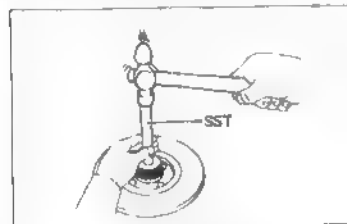
(See page FA-6)

1. PACK BEARINGS WITH MP GREASE

- Place MP grease in the palm of your hand
- Pack grease into the bearing, continuing until the grease oozes out from the other side.
- Do the same around the bearing circumference.



2. COAT INSIDE OF HUB AND GREASE CAP WITH MP GREASE



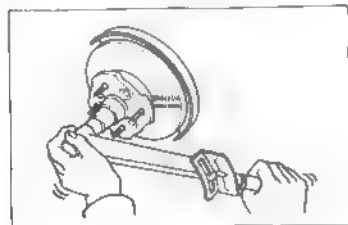
3. INSTALL INNER BEARING AND OIL SEAL

Place the inner bearing into the hub. Using SST, drive the oil seal into the hub. Coat the oil seal with MP grease.

SST 09608-20011

4. INSTALL AXLE HUB ON SPINDLE

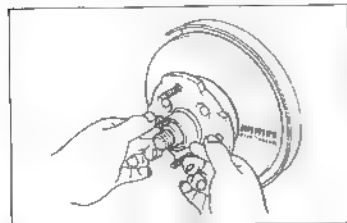
- Place the axle hub on the spindle
- Install the outer bearing and thrust washer.



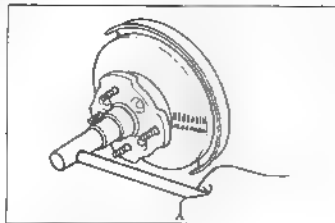
5. ADJUST PRELOAD

- Install and torque the adjusting nut.

Torque: 290 kg-cm (21 ft-lb)



- Snug down the bearing by turning the hub several times.

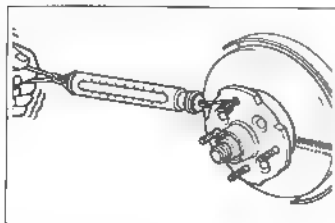


(c) Retighten the adjusting nut.

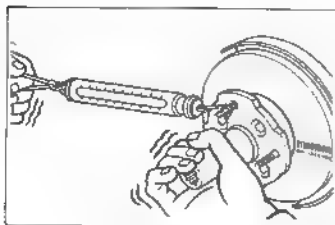
Torque: 290 kg-cm (21 ft-lb)

(d) Loosen the adjusting nut until it can be turned by hand.

NOTE: Confirm that there is absolutely no brake drag.



(e) Measure and make a note of the rotation frictional force of the oil seal

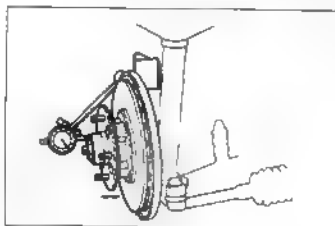


(f) Tighten the adjusting nut until the preload is within standard

Preload

(In addition to rotation friction force of the oil seal)
0 - 1,050 g (0 - 2.3 lb)

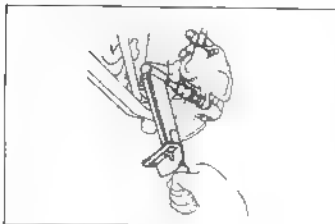
(g) Insure that the hub rotates smoothly



(h) Measure the hub axial play.

Limit: 0.05 mm (0.0020 in.)

6. INSTALL NUT LOCK, COTTER PIN AND GREASE CAP

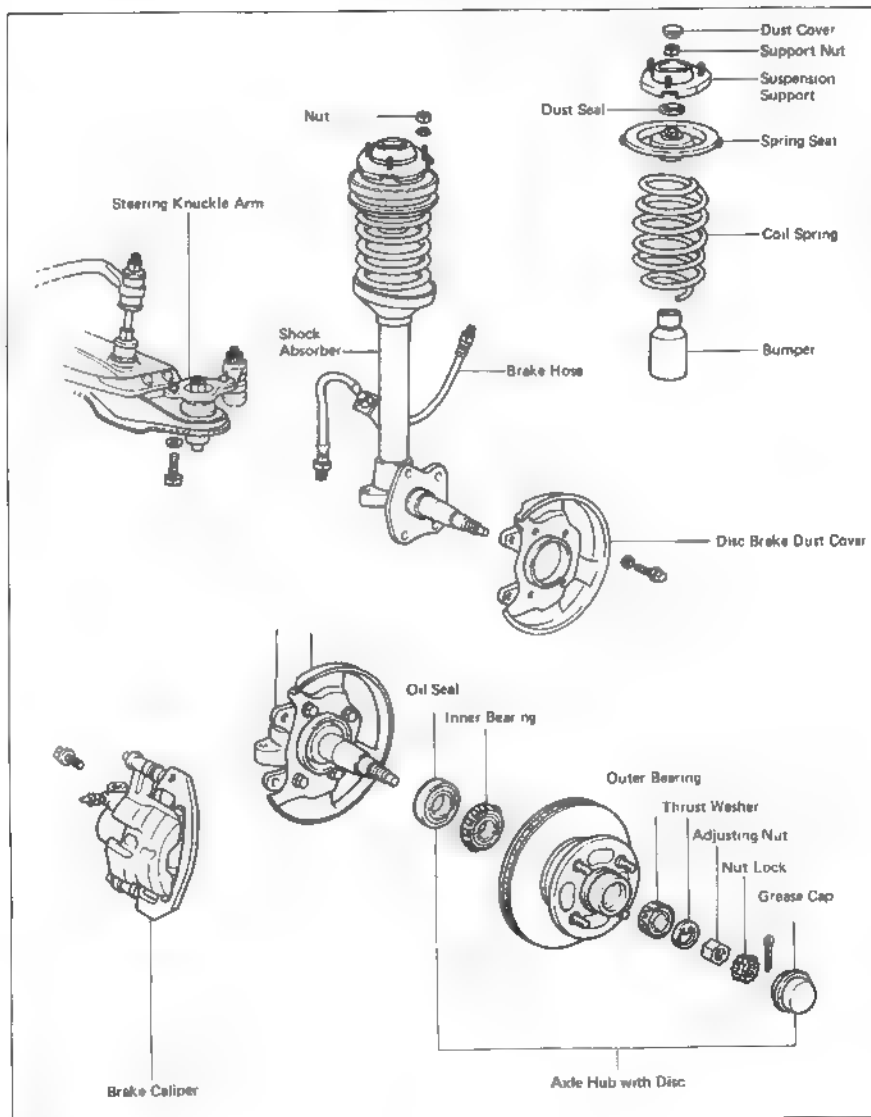


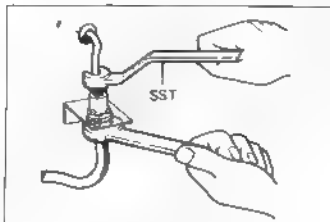
7. INSTALL DISC BRAKE CALIPER

Install brake caliper Torque the mounting bolts.

Torque: 650 kg-cm (47 ft-lb)

FRONT AXLE SHOCK ABSORBER COMPONENTS





REMOVAL OF FRONT SHOCK ABSORBER ASSEMBLY

1. DISCONNECT BRAKE TUBE

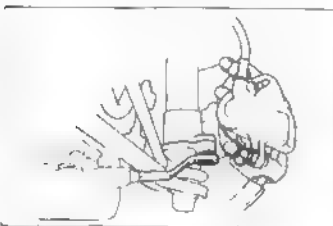
Using SST and an open end wrench, disconnect the brake tube from the flexible hose.

Drain the brake fluid into a container

SST 09751 36011

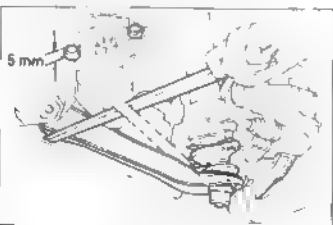


2. REMOVE THREE NUTS



3. REMOVE TWO BOLTS

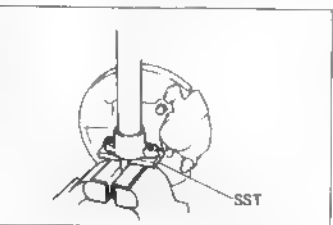
Remove the two bolts mounting the shock absorber assembly to the steering knuckle arm



4. REMOVE FRONT SHOCK ABSORBER, FRONT AXLE HUB AND BRAKE CALIPER

NOTE: Collars extend into the steering knuckle bo t holes about 5 mm (0.20 in.) deep

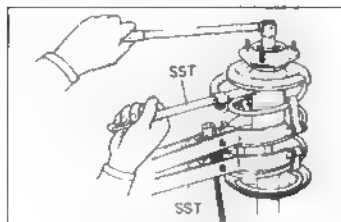
Push the suspension lower arm down and remove the front shock absorber, front axle hub and brake caliper



5. MOUNT FRONT SHOCK ABSORBER IN VISE OR LOCKING PLATE (SST)

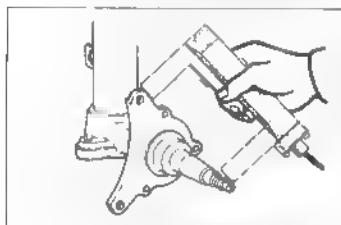
SST 09720-00010

6. REMOVE TWO BRAKE HOSES
7. REMOVE BRAKE CALIPER AND FRONT AXLE HUB
(See page FA-6)
8. REMOVE BACKING PLATE



9. REMOVE COIL SPRING

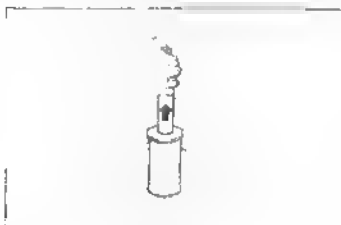
- (a) Using SST, compress the coil spring
SST 09727 22031
- (b) Lower the bumper and using SST to hold the support, remove the support nut
SST 09729 22021
- (c) Remove the suspension support, dust seal, spring seat, spring and bumper.



INSPECTION OF FRONT SHOCK ABSORBER ASSEMBLY

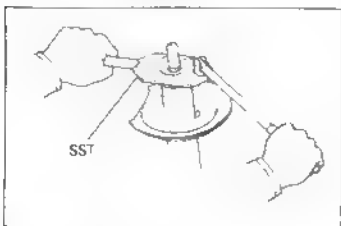
1. INSPECT STEERING KNUCKLE PART OF SHOCK ABSORBER

Using a magnetic flux detector or flaw detecting penetrant, inspect the steering knuckle part of the shock absorber for damage or cracks.



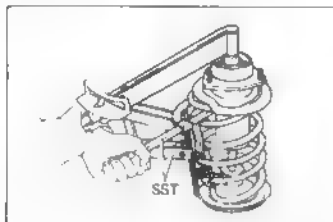
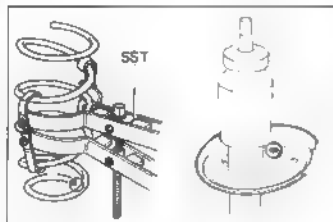
2. INSPECT OPERATION OF SHOCK ABSORBER

- (a) Pull out the shock absorber piston rod at a constant speed and check to see that the pull feeling through out the stroke is the same.
- (b) Check that there is no change in the pull when the piston rod is suddenly moved up and down with a stroke of 5 – 10 mm (0.20 – 0.39 in)



- (c) If the absorber operation is defective, use SST to remove the absorber from the outer shell and then either replace the cartridge or overhaul it.

SST 09720 00010



INSTALLATION OF FRONT SHOCK ABSORBER ASSEMBLY

(See page FA-10)

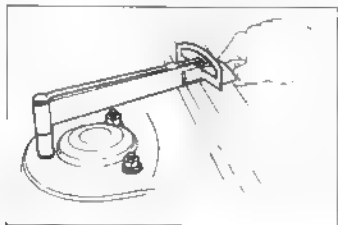
1. **INSTALL BUMPER, COIL SPRING AND SPRING SEAT**
 - (a) Mount the front shock absorber on a stand.
 - (b) Install the bumper to the shock absorber
 - (c) Align the coil spring end with the lower seat hollow and install.
 - (d) Align the spring seat with the piston rod and install.
 - (e) Install the dust seal on the spring seat.
 - (f) Using SST, compress the coil spring
SST 09727-22031
2. **INSTALL SUSPENSION SUPPORT**
 - (a) Using SST to hold the support, install the support with a new nut. Torque the nut
SST 09729-22021
Torque: 475 kg-cm (34 ft-lb)
 - (b) Pack MP grease into the suspension support bearing
 - (c) Install the dust cover on the suspension support.
3. **INSTALL BACKING PLATE AND FRONT AXLE HUB, ADJUST PRELOAD** (See page FA-8)
4. **INSTALL TWO BRAKE HOSES AND BRAKE CALIPER** (See page FA-9)



5. CONNECT STEERING KNUCKLE ARM

Place the shock absorber assembly in position, and connect the knuckle arm with two bolts. Torque the bolts

Torque: 800 kg-cm (58 ft-lb)



6. INSTALL THREE NUTS

Install three nuts holding the top of the shock absorber
Torque the nuts

Torque: 185 kg-cm (13 ft-lb)

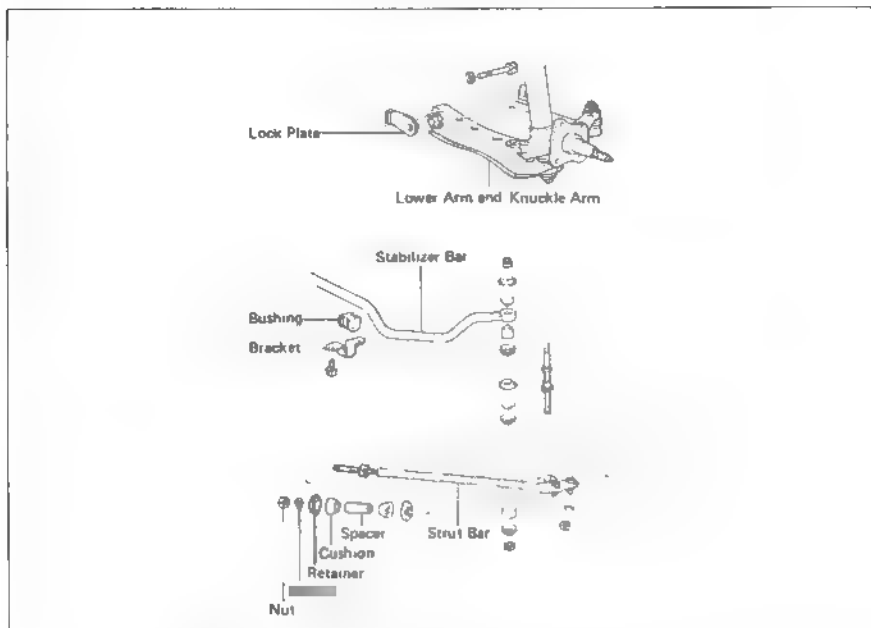
7. CONNECT BRAKE TUBE AND BLEED BRAKE LINES

(See page BR-7)

8. CHECK FRONT WHEEL ALIGNMENT AND SIDE SLIP

(See page FA-3)

FRONT SUSPENSION COMPONENTS



Ball Joints

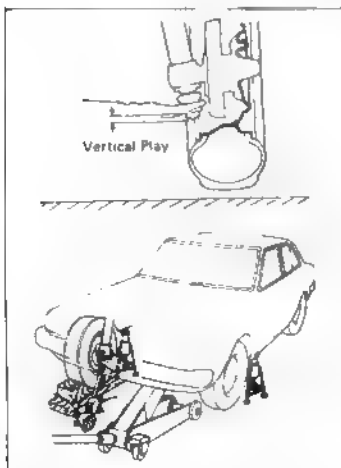
INSPECTION OF BALL JOINTS

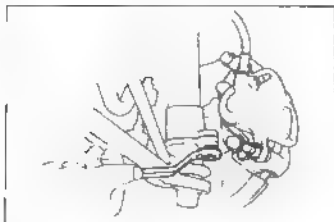
1. INSPECT BALL JOINTS FOR EXCESSIVE LOOSENESS

- Jack up the front of the vehicle and place wooden blocks with a height of 180-200 mm (7.09-7.87 in.) under one front tire.
- Lower the jack until there is about half a load on the front coil springs. Place stands under the vehicle for safety.
- Make sure the front wheels are in a straight forward position and block them with chocks.
- Move the lower arm up and down and check that the ball joint has no excessive play.

Maximum ball joint vertical play: 2.5 mm (0.098 in.)

- Inspect the ball joint on the opposite side in the same manner (steps a through d).





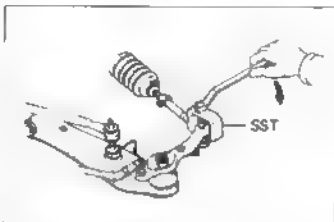
Lower Arm

(See page FA-14)

REMOVAL OF LOWER ARM

1. DISCONNECT KNUCKLE ARM FROM SHOCK ABSORBER

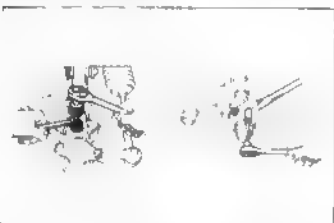
- Remove two bolts holding the knuckle arm to the shock absorber
- Push the lower arm down, and disconnect the shock absorber from the knuckle arm



2. DISCONNECT KNUCKLE ARM FROM TIE ROD

- Remove the cotter pin and nut holding the knuckle arm to the tie rod
- Using SST, disconnect the knuckle arm from the tie rod

SST 09611 22012



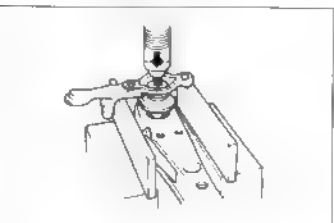
3. DISCONNECT STABILIZER BAR AND STRUT BAR FROM LOWER ARM

- Remove the nut holding the stabilizer bar to the lower arm and disconnect the stabilizer bar
- Remove the nuts holding the strut bar to the lower arm and disconnect the strut bar



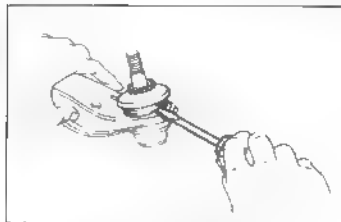
4. REMOVE LOWER ARM

Remove the bolt holding the lower arm to the cross member and remove the lower arm



5. DISCONNECT KNUCKLE ARM FROM LOWER ARM

- Remove the cotter pin and nut holding the knuckle arm to the ball joint
- Using a press, disconnect the knuckle arm from the lower arm.



REPLACEMENT OF LOWER ARM DUST COVER

1. REMOVE DUST COVER

Remove the dust cover set wire and dust cover

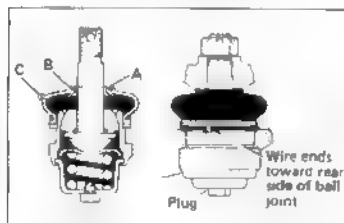
2. INSTALL DUST COVER

- Apply ball joint grease to areas "A" and "B" of a new dust cover
- Install the dust cover with escape valve "C" facing the rear of the vehicle.
- Wind wire twice around the dust cover and bend the wire knot down.
- Remove the plug and install the grease fitting
- Fill with ball joint grease.

Molybdenum Disulphide Lithium Base Grease:

NLGI No. 1 or No. 2

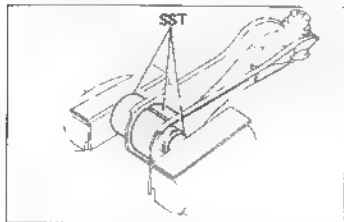
- Remove the grease fitting and install the plug.



REPLACEMENT OF LOWER ARM BUSHING

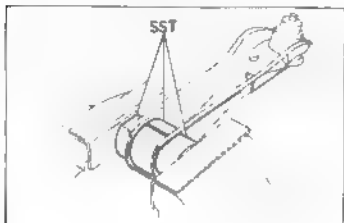
1. REMOVE LOWER ARM BUSHING

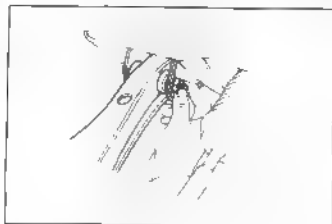
Using SST, press out the bushing from the lower arm
SST 09726-12021



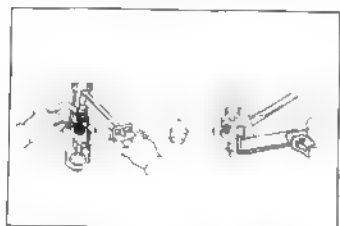
2. INSTALL LOWER ARM BUSHING

Using SST, press the bushing into the lower arm
SST 09726-12021



**INSTALLATION OF LOWER ARM****1. INSTALL LOWER ARM IN CROSSMEMBER**

Install the lower arm to the crossmember with a bolt.
Do not torque the bolt

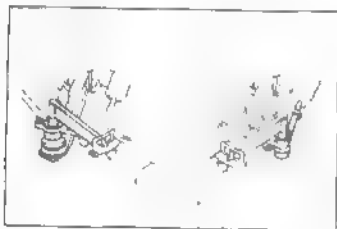
**2. CONNECT STABILIZER BAR AND STRUT BAR TO LOWER ARM**

(a) Connect the stabilizer bar to the lower arm with the bolt and nut. Torque the nut.

Torque: 180 kg-cm (13 ft-lb)

(b) Connect the strut bar to the lower arm with the two nuts. Torque the two nuts.

Torque: 475 kg-cm (34 ft-lb)

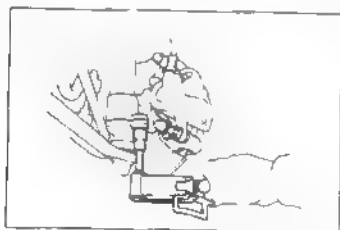
**3. CONNECT KNUCKLE ARM TO BALL JOINT AND TIE ROD**

(a) Install the knuckle arm on the ball joint with the nut.
Torque the nut and install a new cotter pin.

Torque: 800 kg-cm (58 ft-lb)

(b) Install the knuckle arm on the tie rod with the nut.
Torque the nut and install a new cotter pin

Torque: 800 kg-cm (43 ft-lb)

**4. CONNECT KNUCKLE ARM TO SHOCK ABSORBER**

Place the shock absorber assembly in position and connect the knuckle arm with two bolts. Torque the bolts.

Torque: 800 kg-cm (58 ft-lb)

**5. INSTALL WHEEL AND LOWER VEHICLE****6. TORQUE BOLT HOLDING LOWER ARM TO CROSSMEMBER**

After bouncing the vehicle to settle the suspension, torque the bolt.

Torque: 800 kg-cm (58 ft-lb)

7. CHECK FRONT WHEEL ALIGNMENT AND SIDE SLIP



Strut Bar

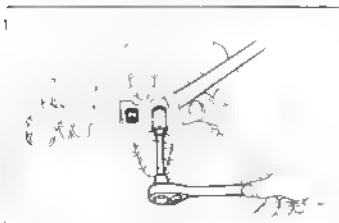
(See page FA-14)

REMOVAL OF STRUT BAR

1. DISCONNECT STRUT BAR FROM BRACKET

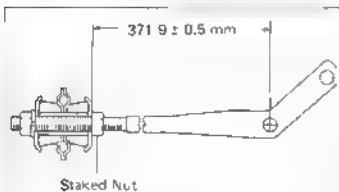
Remove the nut, washer, retainer, spacer and cushion from the bracket

NOTE: Do not remove the staked nut



2. REMOVE STRUT BAR FROM LOWER ARM

Jack up the lower arm and disconnect the strut bar from the lower arm. Remove the nuts holding the strut bar to the lower arm, and disconnect the strut bar. Remove the cushion and retainer from the strut bar.



INSTALLATION OF STRUT BAR

1. ADJUST STAKED NUT

Check that the distance between the staked nut and center of the bolt hole is 371.9 ± 0.5 mm (14.642 ± 0.020 in.). Adjust the staked nut as necessary

NOTE Do not adjust the staked nut unless required.

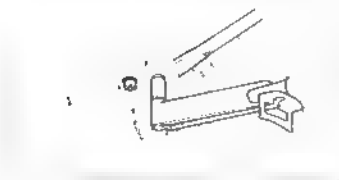
2. INSTALL RETAINER AND CUSHION ONTO STRUT BAR

3. INSTALL FRONT END TO BRACKET

4. CONNECT STRUT BAR TO LOWER ARM

Jack up the lower arm and connect the strut bar to the lower arm. Torque the nuts.

Torque: 475 kg-cm (34 ft-lb)



5. CONNECT STRUT BAR TO BRACKET

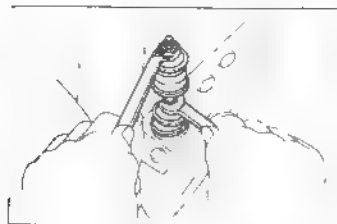
(a) Install the spacer, cushion, retainer, washer and nut.

(b) Torque the nut

Torque: 925 kg-cm (67 ft-lb)



6. CHECK FRONT WHEEL ALIGNMENT AND SIDE SLIP

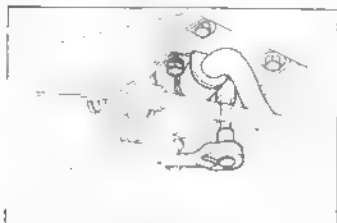


Stabilizer Bar

(See page FA-14)

REMOVAL OF STABILIZER BAR

1. REMOVE ENGINE UNDER COVER
2. DISCONNECT STABILIZER BAR FROM LOWER ARMS



3. REMOVE BOTH STABILIZER BAR BRACKETS FROM STRUT BAR BRACKETS

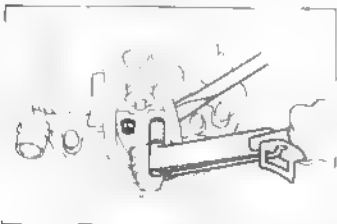
4. REMOVE STRUT BAR WITH STRUT BAR BRACKET ON ONE SIDE

(a) Remove the two nuts, and disconnect the strut bar from the lower arm.

(b) Remove the four strut bar bracket bolts.

5. REMOVE STABILIZER BAR

Pull out the stabilizer bar through the strut bar bracket hole



INSTALLATION OF STABILIZER BAR

1. INSERT STABILIZER BAR THROUGH STRUT BAR BRACKET HOLE

2. INSTALL STRUT BAR BRACKET

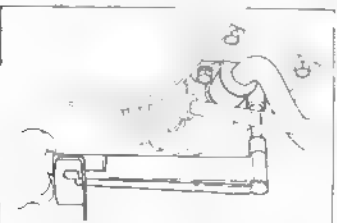
Install the strut bar bracket and torque the four bolts.

Torque: 475 kg-cm (34 ft-lb)

3. INSTALL STRUT BAR TO LOWER ARM

Install the strut bar and torque the nuts.

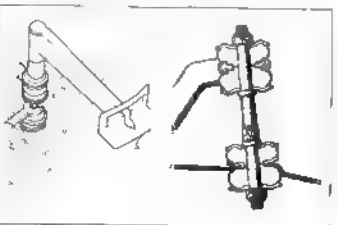
Torque: 475 kg-cm (34 ft-lb)



4. INSTALL STABILIZER BAR ON BRACKETS

Place the stabilizer bar in position and install both stabilizer bushings and brackets on the strut bar brackets. Torque the bolts

Torque: 130 kg-cm (9 ft-lb)



5. CONNECT STABILIZER BAR TO LOWER ARMS

Connect the stabilizer bar on both sides to the lower arms with the bolts, cushions and nuts as shown. Torque the nuts.

Torque: 180 kg-cm (13 ft-lb)

6. INSTALL ENGINE UNDER COVER

7. CHECK FRONT WHEEL ALIGNMENT

REAR AXLE AND SUSPENSION

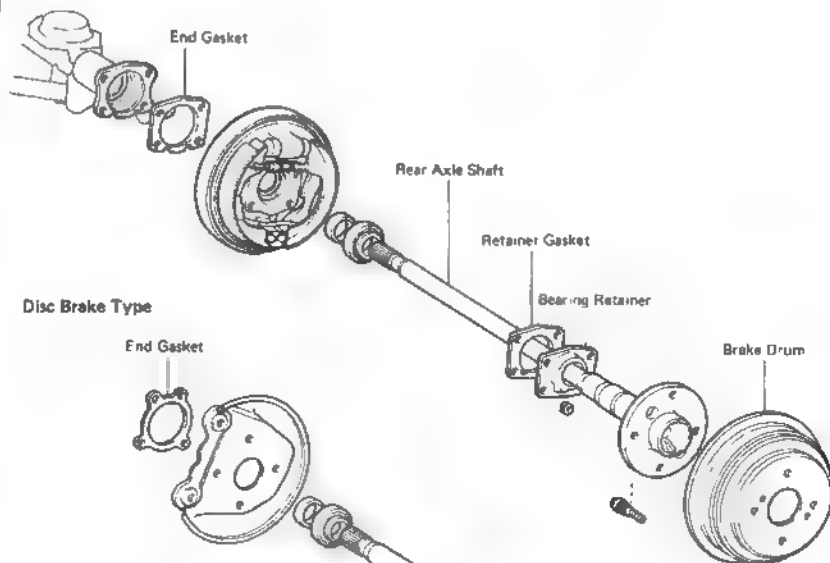
	Page
TROUBLESHOOTING	RA-2
REAR AXLE SHAFT	RA-3
CONVENTIONAL TYPE DIFFERENTIAL	RA-8
LIMITED SLIP DIFFERENTIAL	RA-25
REAR SUSPENSION	RA-32

TROUBLESHOOTING

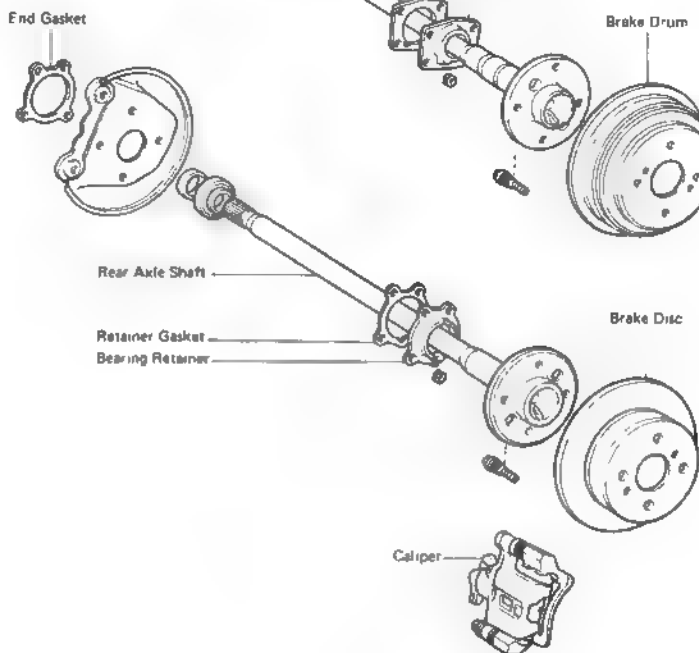
Problem	Possible cause	Remedy	Page
Oil leak at rear axle	Oil seals worn or damaged	Replace oil seal	RA-6
	Bearing retainer loose	Replace retainer	RA-5
	Rear axle housing cracked	Repair as necessary	
Oil leak at pinion shaft	Oil level too high or wrong oil grade	Drain or replace oil	
	Oil seal worn or damaged	Replace oil seal	RA-12
	Companion flange loose or damaged	Tighten or replace flange	RA-12
Noises in rear axle	Oil level low or wrong oil grade	Refill or replace oil	
	Excessive backlash between pinion and ring or side gear	Check backlash	RA-11
	Ring, pinion or side gears worn or chipped	Inspect gears	RA-11
	Pinion shaft bearing worn	Replace bearing	RA-11
	Axle shaft bearing worn	Replace bearing	RA-3
	Differential bearing loose or worn	Tighten or replace bearings	RA-13
Bottoming	Vehicle overloaded	Check loading	
	Shock absorber worn out	Replace shock absorber	RA-33
	Springs weak	Replace spring	RA-33
Faulty LSD operation	Oil wrong grade	Drain and replace oil	
	Clutch plate, thrust washer and side gear burnt	Repair differential case	RA-25
	Clutch plate, thrust washer, side gear and clutch member worn out	Repair differential case	RA-25
	Differential case cover loose	Tighten differential case cover	RA-25
	Adjustment incorrect	Repair and adjust differential case	RA-25

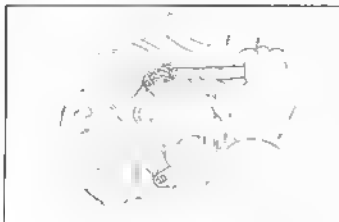
REAR AXLE SHAFT COMPONENTS

Drum Brake Type



Disc Brake Type



**REMOVAL OF REAR AXLE SHAFT**

(See page RA-3)

1. REMOVE WHEEL
2. REMOVE FOLLOWING PARTS:

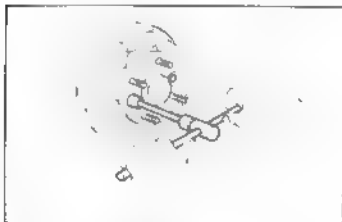
(Drum brake type)

- Brake drum

(Disc brake type)

- Brake caliper
- Disc rotor

3. REMOVE FOUR BACKING PLATE MOUNTING NUTS

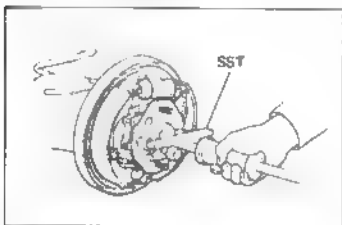


4. REMOVE REAR AXLE SHAFT

Using SST, pull out the rear axle shaft

SST 09520-00031

CAUTION. When pulling out the rear axle shaft, be careful not to damage the oil seal.



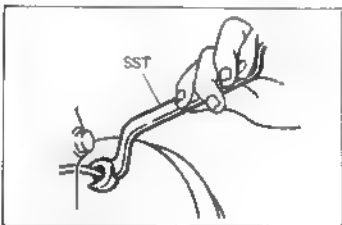
5. REMOVE END GASKET

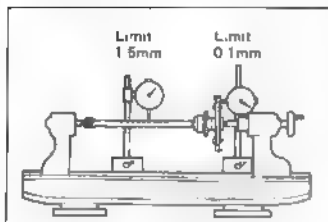
- (a) Using SST, disconnect the brake tube
Use a container to catch the brake fluid.

SST 09751-36011

- (b) Remove the backing plate.

- (c) Remove the end gasket from the rear axle housing





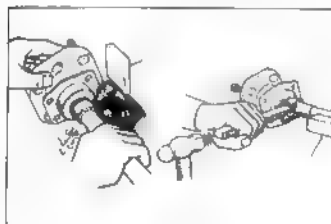
INSPECTION AND REPAIR OF REAR AXLE SHAFT COMPONENTS

1. INSPECT REAR AXLE SHAFT AND FLANGE FOR WEAR, DAMAGE OR RUNOUT

Maximum shaft runout: 1.5 mm (0.059 in.)

Maximum flange runout: 0.1 mm (0.004 in.)

If the rear axle shaft or flange are damaged or worn, or if runout is greater than maximum, replace the rear axle shaft.

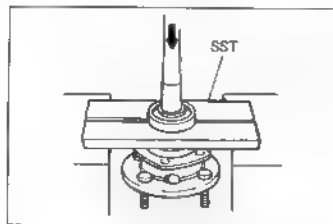


2. INSPECT REAR AXLE BEARING FOR WEAR OR DAMAGE

If the bearing is damaged or worn, replace it.

3. REMOVE BEARING INNER RETAINER

- Using a grinder, grind down the inner retainer
- Using a hammer and chisel, cut off the retainer and remove it from the shaft

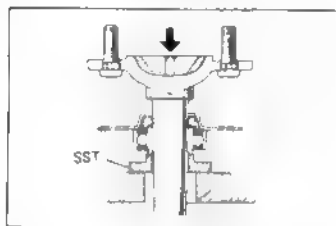


4. REMOVE BEARING FROM SHAFT

Using SST, press the bearing off of the shaft

SST 09527-21011 (Drum Brake Type)

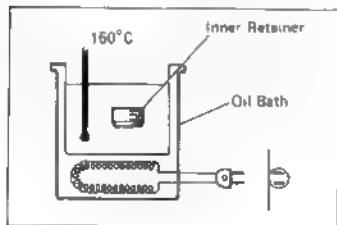
09527-30010 (Disc Brake Type)



5. INSTALL BEARING OUTER RETAINER AND NEW BEARING ON SHAFT

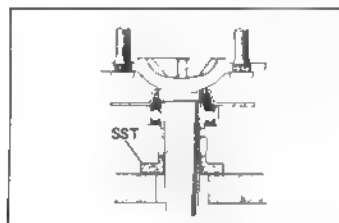
Using SST, press on the bearing outer retainer and a new bearing.

SST 09515-21010



6. INSTALL BEARING INNER RETAINER ON SHAFT

- Heat the bearing inner retainer to about 150°C (302°F) in an oil bath

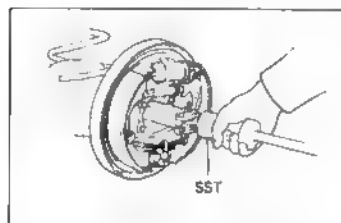


- (b) Using SST, press the retainer onto the shaft while the inner retainer is still hot.

SST 09515-21010

NOTE

- Be sure that there is no oil or grease on the rear axle shaft or retainer.
- Face the non-beveled side of the inner retainer toward the bearing.



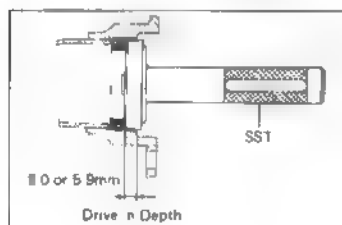
7. INSPECT OIL SEAL FOR WEAR OR DAMAGE

If the seal is damaged or worn, replace it.

8. REMOVE OIL SEAL FROM AXLE HOUSING

Using SST, remove the oil seal.

SST 09306 00010



9. INSTALL NEW OIL SEAL IN AXLE HOUSING

- (a) Apply MP grease to the oil seal.

- (b) Using SST, drive in the oil seal to a depth of 5.9 mm or 2.0 mm

Depth: Drum Brake Type

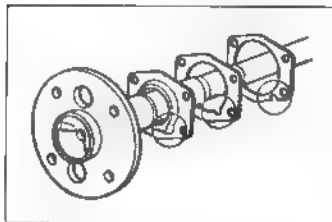
5.9 ± 0.2 mm (0.232 ± 0.008 in.)

Disc Brake Type

2.0 ± 0.5 mm (0.079 ± 0.020 in.)

SST 09517 12010 (Drum Brake Type)

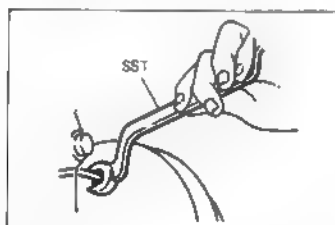
09517 30010 (Disc Brake Type)



INSTALLATION OF REAR AXLE SHAFT

(See page RA-3)

1. CLEAN FLANGE OF AXLE HOUSING AND BACKING PLATE
2. APPLY LIQUID SEALER TO BOTH SIDES OF END GASKET AND RETAINER GASKET
3. PLACE END GASKET ONTO END OF AXLE HOUSING
Face the notch of gasket downward
4. INSTALL REAR AXLE SHAFT

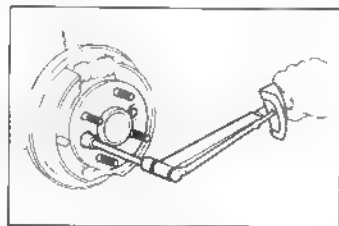


NOTE Align the notches of the two gaskets and bearing outer retainer with the oil hole of the backing plate.

- (a) Install the backing plate to the axle housing and, using SST, connect the brake tube.

SST 09751 38011

- (b) Place the retainer gasket on the axle shaft

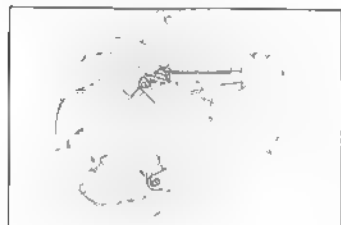


- (c) Install the rear axle shaft with four new self locking nuts.

Torque: 670 kg-cm (48 ft-lb)

NOTE

- Be careful not to damage the oil seal
- When inserting the axle shaft, be careful not to hit or deform the oil deflector inside the axle housing.



5. INSTALL FOLLOWING PARTS

(Drum brake type)

- Brake drum

(Disc brake type)

- Disc rotor
- Brake caliper

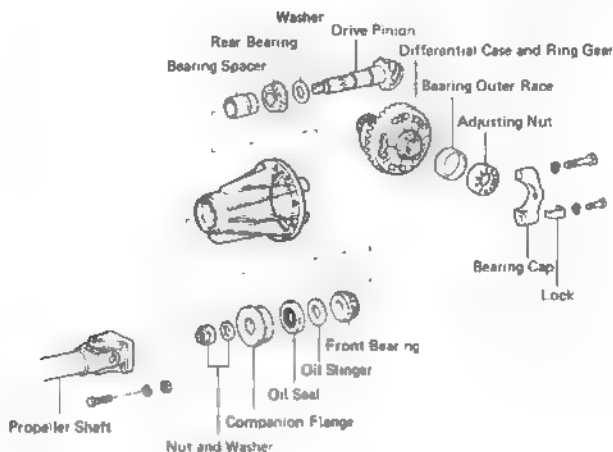
Torque: 475 kg-cm (34 ft-lb)

6. BLEED BRAKE LINES (See page BR-7)

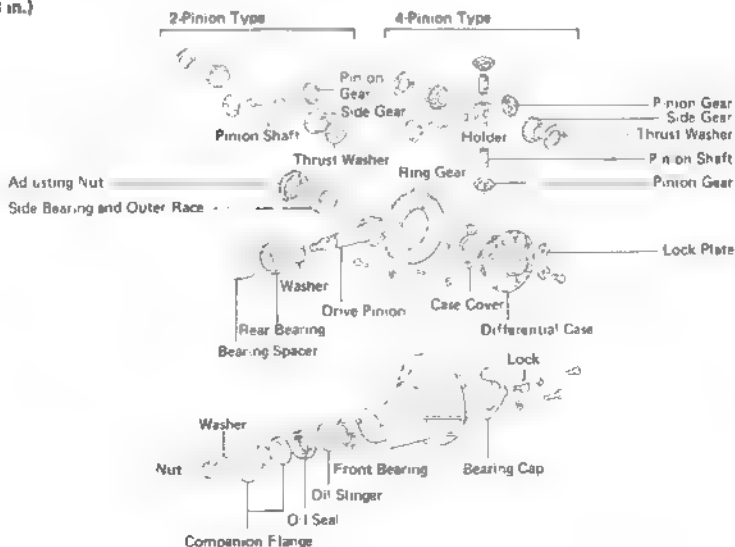
7. INSTALL WHEEL

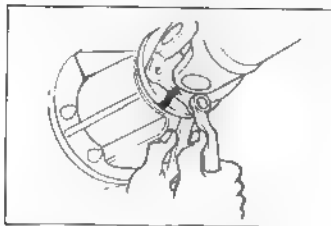
CONVENTIONAL TYPE DIFFERENTIAL COMPONENTS

(6.7 in.)



(6.38 in.)

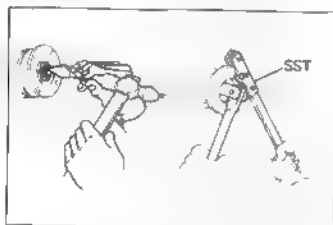




ON-VEHICLE REPLACEMENT OF OIL SEAL

1. DISCONNECT PROPELLER SHAFT FROM DIFFERENTIAL

- Place alignment marks on the flanges.
- Remove the four bolts and nuts.



2. REMOVE COMPANION FLANGE

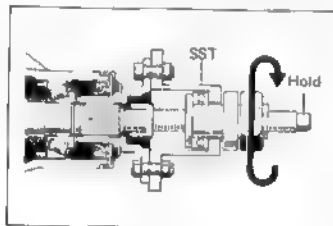
(See step 7 on page RA-12)
SST 09330-00020 and 09557-22022

3. REMOVE OIL SEAL AND OIL SLINGER

(See step 8 on page RA-12)
SST 0930B 10010

4. REMOVE FRONT BEARING AND BEARING SPACER

(See step 9 on page RA-12)
SST 09556-22010



5. INSTALL NEW BEARING SPACER AND FRONT BEARING

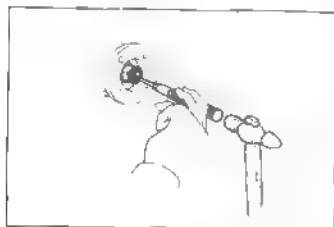
(See step 9 on page RA-21)

6. INSTALL OIL SLINGER AND NEW OIL SEAL

(See step 10 on page RA-22)
SST 09554-22010

7. INSTALL COMPANION FLANGE

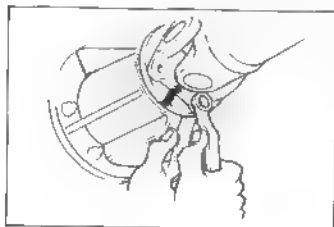
(See step 11 on page RA-22)
SST 09557-22022



8. ADJUST FRONT BEARING PRELOAD

(See step 12 on page RA-22)

9. STAKE DRIVE PINION NUT

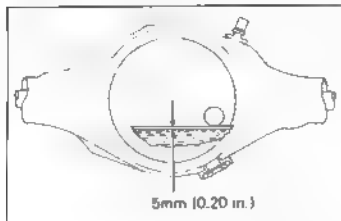


10. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE

- Align the marks on the flanges and connect the flanges with four bolts and nuts.

- Torque the four bolts and nuts

Torque: 350 kg-cm (25 ft-lb)

**11. CHECK DIFFERENTIAL OIL LEVEL**

Fill with hypoid gear oil if necessary

Hypoid gear oil: SAE 90 API GL-5
SAE 80W or 80W-90
at temperature below — 18°C (0°F)
w/LSD use LSD oil only

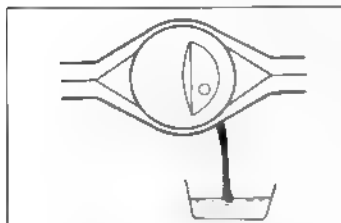
Capacity:

6.7 in. and LSD	1.3 liters (1.4 US qts, 1.1 Imp. qts)
6.38 in.	1.0 liters (1.1 US qts, 0.9 Imp. qts)

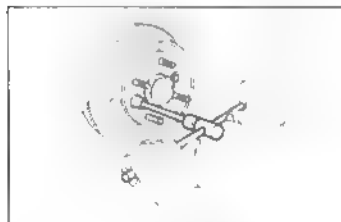
REMOVAL OF DIFFERENTIAL

(See page RA-8)

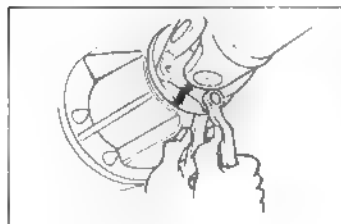
1. REMOVE DRAIN PLUG AND DRAIN DIFFERENTIAL OIL



2. REMOVE REAR AXLE SHAFT (See page RA-3)



3. DISCONNECT PROPELLER SHAFT FROM DIFFERENTIAL (See page RA-8)
4. REMOVE DIFFERENTIAL CARRIER ASSEMBLY

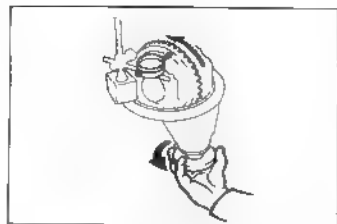


DISASSEMBLY OF DIFFERENTIAL

(See page RA-8)

NOTE If the differential is noisy, perform the following pre-inspection before disassembly to determine the cause of the noise.

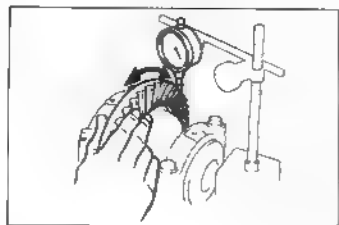
If the differential has severe problems, disassemble and repair it as necessary.



1. CHECK RING GEAR RUNOUT

If the runout is greater than maximum, install a new ring gear.

Maximum runout: 0.07 mm (0.0028 in.)



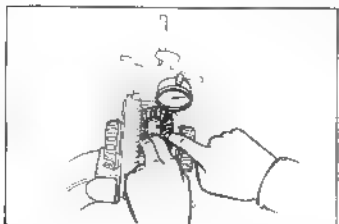
2. CHECK RING GEAR BACKLASH

If the backlash is not within specifications, adjust the side bearing preload or repair as necessary (See step 5 on page RA-19).

Backlash: 0.13 — 0.18 mm (0.0051 — 0.0071 in.)

3. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION (See step 5 on page RA-20)

Note the tooth contact position.



4. CHECK SIDE GEAR BACKLASH

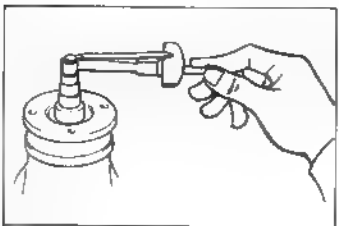
(6.7 in.)

Measure the side gear backlash while holding one pinion gear toward the case.

Standard backlash:

0.05 — 0.20 mm (0.0020 — 0.0079 in.)

If the backlash is not within specification, install the correct thrust washers.



5. MEASURE DRIVE PINION PRELOAD

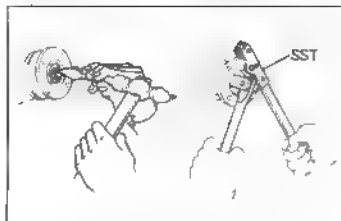
Using a torque meter, measure the preload of the backlash between the drive pinion and ring gear.

Preload: 5 — 8 kg-cm (4.3 — 6.9 in.-lb)

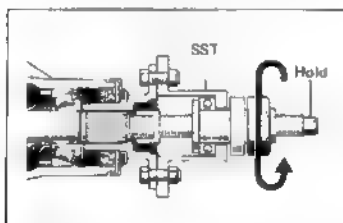
6. CHECK TOTAL PRELOAD

Using a torque meter, measure the total preload.

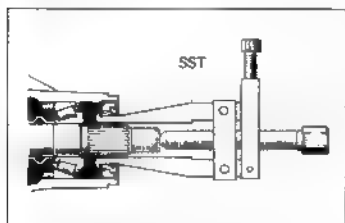
Total preload: In addition to drive pinion preload
6.7 in. and LSD 3 — 5 kg-cm (2.6 — 4.3 in.-lb)
6.38 in. 2 — 4 kg-cm (1.7 — 3.5 in.-lb)

**7 REMOVE COMPANION FLANGE**

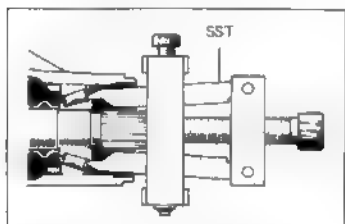
- (a) Using a hammer and chisel, unstake the nut
 - (b) Using SST to hold the flange, remove the nut.
- SST 09330-00020



- (c) Using SST, remove the companion flange.
- SST 09557 22022

**8. REMOVE OIL SEAL AND OIL SLINGER**

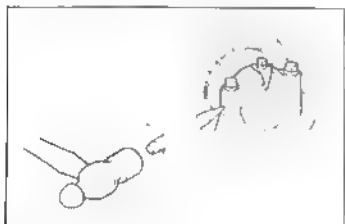
- (a) Using SST, remove the oil seal from the housing.
- SST 09308-10010
- (b) Remove the oil slinger

**9 REMOVE FRONT BEARING AND BEARING SPACER**

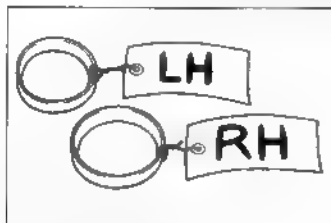
- (a) Using SST, remove the front bearing from the housing.
- SST 09556-22010

- (b) Remove the bearing spacer.

If the front bearing is damaged or worn, replace the bearing.

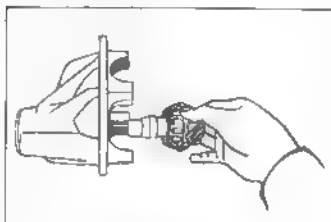
**10. REMOVE DIFFERENTIAL CASE AND RING GEAR**

- (a) Place alignment marks on the bearing cap and differential carrier
- (b) Remove the two adjusting nut locks.
- (c) Remove the two bearing caps and two adjusting nuts.

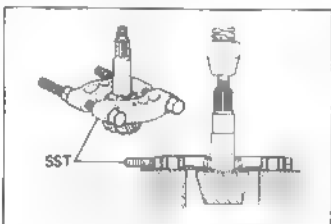


- (d) Remove the bearing outer races
- (e) Remove the differential case from the carrier

NOTE Tag the disassembled parts to show their location for reassembly



11. REMOVE DRIVE PINION FROM DIFFERENTIAL CARRIER

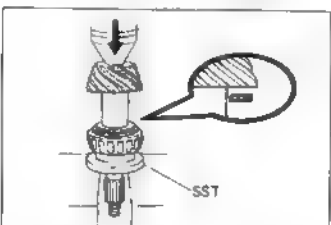


INSPECTION AND REPLACEMENT OF DIFFERENTIAL

1 REPLACE DRIVE PINION REAR BEARING

- (a) Using a press and SST, pul. out the rear bearing from the drive pinion

SST 09950-00020

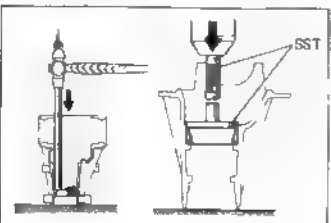


- (b) Install the washer on the drive pinion with the chamfered end facing the pinion gear.

- (c) Using a press and SST, press the reused washer and rear bearing onto the drive pinion.

SST 09506-30011 (6.7 in. and LSD)

09608-20011 (6.38 in.)



2. REPLACE DRIVE PINION FRONT AND REAR BEARING OUTER RACE

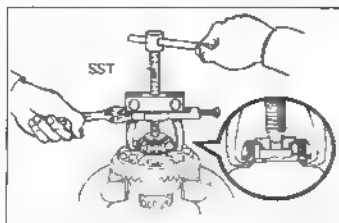
- (a) Using a hammer and driver, drive out the outer race.
- (b) Using SST, drive in a new outer race.

SST 6 7 in. and LSD 09608-30011 (Front Bearing)

09608-30030 (Rear Bearing)

6 38 in 09608-12020 (Front Bearing)

09608-20011 (Rear Bearing)



3. REMOVE SIDE BEARINGS FROM DIFFERENTIAL CASE

Using SST, pull the side bearing from the differential case.

SST 09950 20014 (6.7 in.)
09502 10012 (6.38 in.)

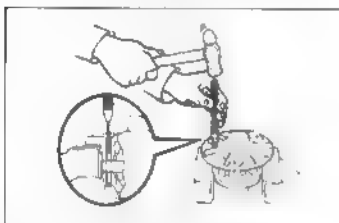


4. REMOVE RING GEAR

(a) Remove the ring gear set bolts and lock plates.

(b) Place alignment marks on the ring gear and differential case.

(c) Using a plastic or copper hammer, tap on the ring gear to separate it from the differential case.

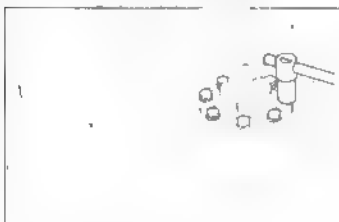


5. DISASSEMBLE DIFFERENTIAL CASE

(6.7 in.)

Using a hammer and punch, drive out the straight pin.

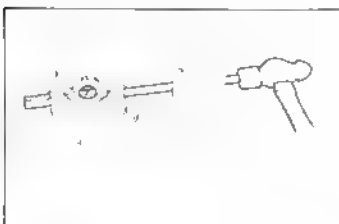
Remove the pinion shaft, two pinion gears, two side gears and two thrust washers.



(6.38 in.)

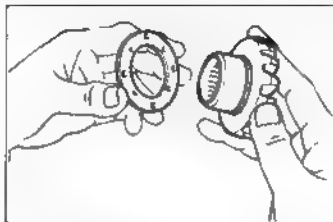
(a) Place matchmarks on the differential case and case cover, and remove the bolts.

(b) Remove the case cover.



(c) Tap out three pinion shafts and remove the following parts:

- Pinion shaft holder
- Pinion gear
- Side gear
- Thrust washer



6. ASSEMBLE DIFFERENTIAL CASE

(6.7 in.)

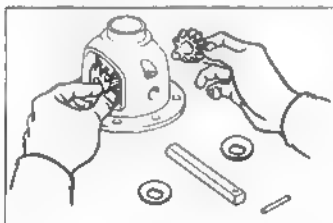
- (a) Install the correct thrust washers and side gears in the differential case. Referring to the table below, select thrust washers which adjust the backlash to within specification. Try to select washers of the same size for both sides.

Standard backlash: 0.05 — 0.20 mm
(0.0020 — 0.0079 in.)

Thrust washer thickness

Thickness	mm (in.)	Thickness	mm (in.)
0.95	(0.0374)	1.10	(0.0433)
1.00	(0.0394)	1.15	(0.0453)
1.05	(0.0413)	1.20	(0.0472)

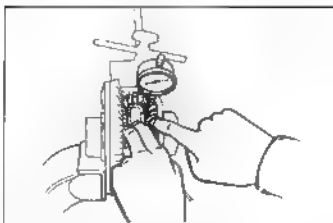
Install the thrust washers and side gears in the differential case.



- (b) Check the side gear backlash. Measure the side gear backlash while holding one pinion gear toward the case.

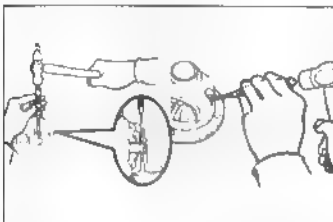
Standard backlash: 0.05 — 0.20 mm
(0.0020 — 0.0079 in.)

If the backlash is not within specification, install a thrust washer of different thickness



- (c) Install the straight pin

- Using a hammer and punch, drive the straight pin through the case and hole in the pinion shaft
- Stake the pin and differential case

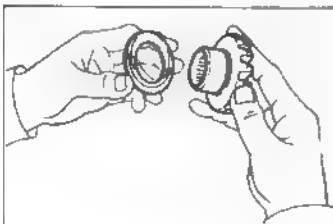


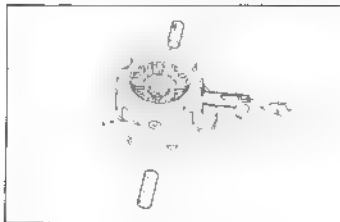
(6.38 in.)

- (a) Install the correct thrust washers and side gears in the differential case.

Using the table below, select thrust washers which adjust the backlash to within specification. Try to select washers of the same size for both sides.

Standard backlash: 0.02 — 0.20 mm
(0.0008 — 0.0079 in.)





Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
1.50 (0.0591)	1.65 (0.0650)
1.55 (0.0610)	1.70 (0.0669)
1.60 (0.0630)	1.75 (0.0689)

- (b) Install the thrust washer and side gear in the differential case.

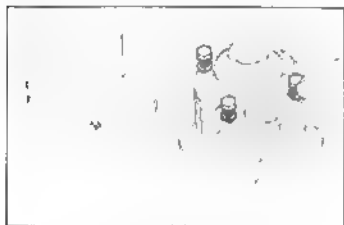
- (c) Install the pinion gears and shafts in the differential

- (d) Check the side gear backlash

Measure the side gear backlash while holding one pinion gear toward the case

Standard backlash: 0.02 - 0.20 mm
(0.0008 - 0.0079 in.)

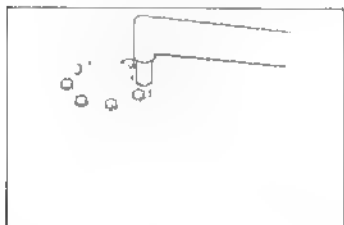
If the backlash is not within specification, install a thrust washer of different thickness.



- (e) Install the case cover with the side gear and other parts assembled to it

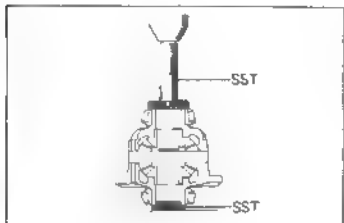
- (f) Align the alignment marks.

- (g) Place the three long bolts into the pinion shaft holes.



- (h) Tighten the bolts uniformly and a little at a time.

Torque: 315 kg-cm (23 ft-lb)

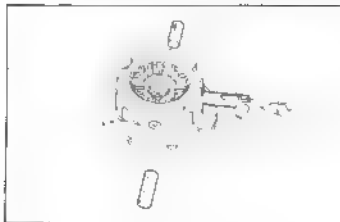


7. INSTALL NEW SIDE BEARING

Using SST, press in a new side bearing on to the differential case.

SST 09550-10012 (6.7 in.)

09608-12010 (6.38 in.)



Thrust washer thickness

Thickness mm (in.)	Thickness mm (in.)
1.50 (0.0591)	1.65 (0.0650)
1.55 (0.0610)	1.70 (0.0669)
1.60 (0.0630)	1.75 (0.0689)

- (b) Install the thrust washer and side gear in the differential case.

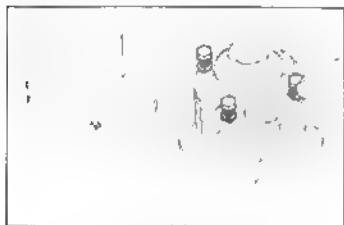
- (c) Install the pinion gears and shafts in the differential

- (d) Check the side gear backlash

Measure the side gear backlash while holding one pinion gear toward the case

Standard backlash: 0.02 - 0.20 mm
(0.0008 - 0.0079 in.)

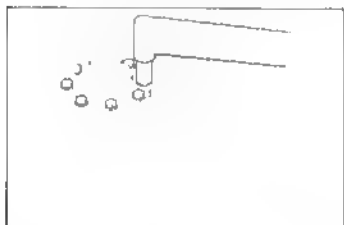
If the backlash is not within specification, install a thrust washer of different thickness.



- (e) Install the case cover with the side gear and other parts assembled to it

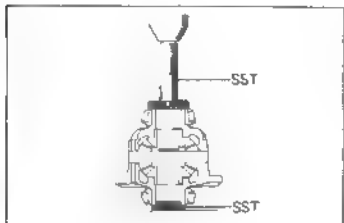
- (f) Align the alignment marks.

- (g) Place the three long bolts into the pinion shaft holes.



- (h) Tighten the bolts uniformly and a little at a time.

Torque: 315 kg-cm (23 ft-lb)

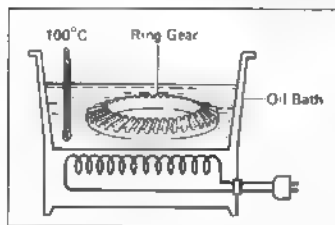


7. INSTALL NEW SIDE BEARING

Using SST, press in a new side bearing on to the differential case.

SST 09550-10012 (6.7 in.)

09608-12010 (6.38 in.)



8. INSTALL RING GEAR ON DIFFERENTIAL CASE

- (a) Clean the contact surface of the differential case.
- (b) Heat the ring gear to about 100°C (212°F) in an oil bath.
- (c) Clean the contact surface of the ring gear with cleaning solvent.
- (d) Then quickly install the ring gear on the differential case.
- (e) Align the marks on the ring gear and differential case.

CAUTION: Do not heat the ring gear above 110°C (230°F).

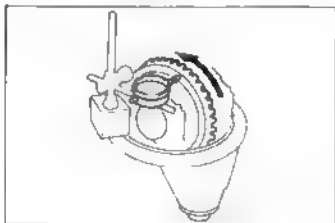
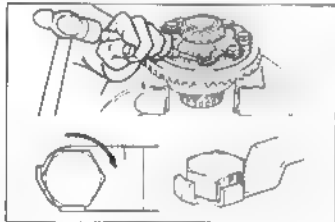
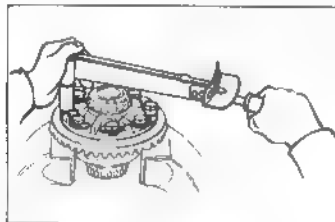
- (f) Coat the ring gear set bolts with gear oil.
- (g) Install the lock plates and set bolts. Tighten the set bolts uniformly and a little at a time. Torque the bolts.

Torque:

- | | |
|----------|----------------------|
| 6.7 in. | 985 kg-cm (71 ft-lb) |
| 6.38 in. | 750 kg-cm (54 ft-lb) |

- (h) Using a hammer and drift punch stake the lock plates.

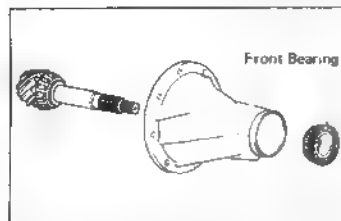
NOTE: Stake one claw flush with the flat surface of the nut. For the claw contacting the protruding portion of the nut, stake only the half on the tightening side.



- (i) Check the ring gear runout.

Maximum runout: 0.07 mm (0.0028 in.)

Install the differential case onto the carrier and tighten the adjusting nut just to where there is no play in the bearing.



ASSEMBLE OF DIFFERENTIAL

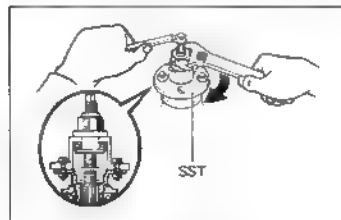
(See page RA-8)

1. TEMPORARILY ADJUST DRIVE PINION PRELOAD

- (a) Install the following parts.

- Drive pinion
- Front bearing

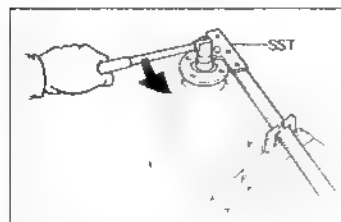
NOTE Assemble the spacer, oil slinger and oil seal after adjusting the gear contact pattern.



- (b) Install the companion flange with SST

Coat the threads of the nut with MP grease.

SST 09557 22022

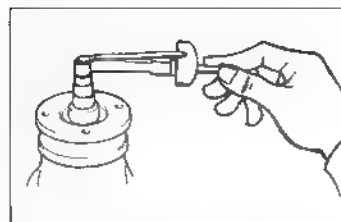


- (c) Adjust the drive pinion preload by tightening the companion flange nut.

Using SST to hold the flange, tighten the nut.

SST 09330-00020

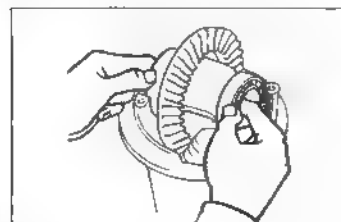
CAUTION: As there is no spacer, tighten a little at a time, being careful not to overtighten



- (d) Using a torque meter, measure the preload

Preload:

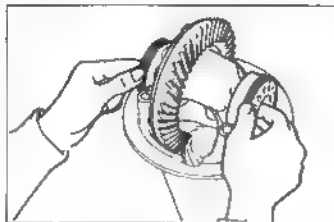
New bearing	10 – 16 kg-cm (8.7 – 13.9 in.-lb)
Reused bearing	5 – 8 kg-cm (4.3 – 6.9 in.-lb)



2. INSTALL DIFFERENTIAL CASE IN CARRIER

- (a) Place the bearing outer races on their respective bearings. Make sure the left and right outer races are not interchanged.

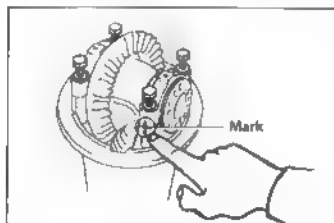
- (b) Install the case in the carrier



3. INSTALL ADJUSTING NUTS

Install the adjusting nuts on their respective carrier, making sure the nuts are threaded properly.

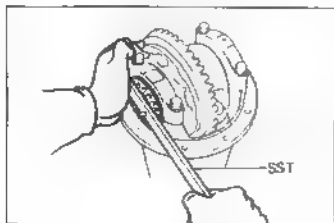
NOTE: Make sure that there is backlash between the ring gear and drive pinion.



4. INSTALL BEARING CAPS

Align the marks on the cap and carrier. Screw in the two bearing cap bolts two or three turns and press down the bearing cap by hand.

NOTE: If the bearing cap does not fit tightly on the carrier, the adjusting nut threads are not threaded properly. Reinstall adjusting nuts if necessary.

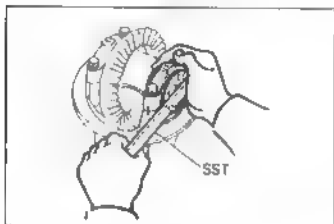


5. ADJUST SIDE BEARING PRELOAD

(a) Tighten the bearing cap bolts until the spring washers are slightly compressed.

(b) Using SST, tighten the adjusting nut on the ring gear side until the ring gear has a backlash of about 0.2 mm (0.008 in.).

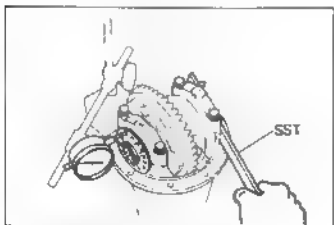
SST 09504 00011



(c) Using SST, firmly tighten the adjusting nut on the drive pinion side.

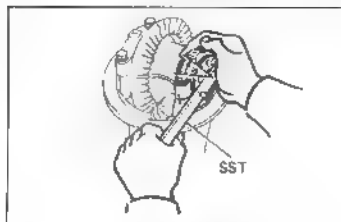
(d) Check the ring gear backlash.

If tightening the adjusting nut creates ring gear backlash, loosen the nut to where the backlash is eliminated.

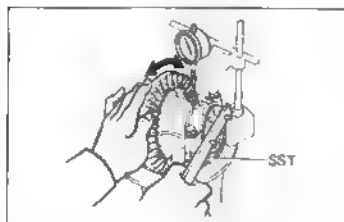


(e) Place a dial indicator on the top of the bearing cap on the ring gear side.

(f) Adjust the side bearing to zero preload by tightening the other adjusting nut until the pointer on the dial indicator begins to move.



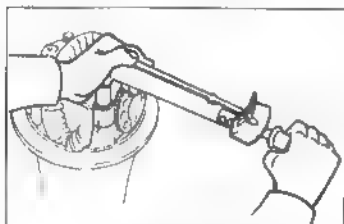
- (g) Tighten the adjusting nut 1 – 1½ notches from the zero preload position



- (h) Using a dial indicator, adjust the ring gear backlash to within specification.

Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)

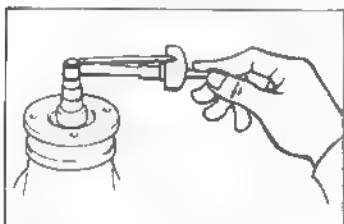
NOTE The backlash is adjusted by turning the left and right adjusting nuts equal amounts. For example, loosen the nut on the left side one notch and tighten the nut on the right side one notch



- (i) Torque the bearing cap bolts.

Torque

6.7 in. and LSD	800 kg-cm (58 ft.-lb)
6.38 in.	600 kg-cm (43 ft.-lb)



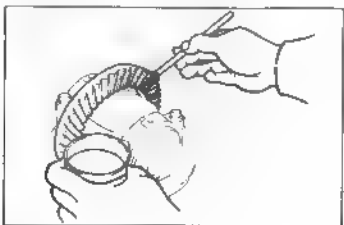
- (j) Recheck the ring gear backlash

- (k) Using a torque meter, measure the total preload

Total Preload (In addition to drive pinion preload):

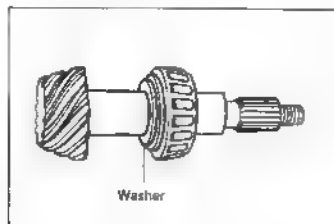
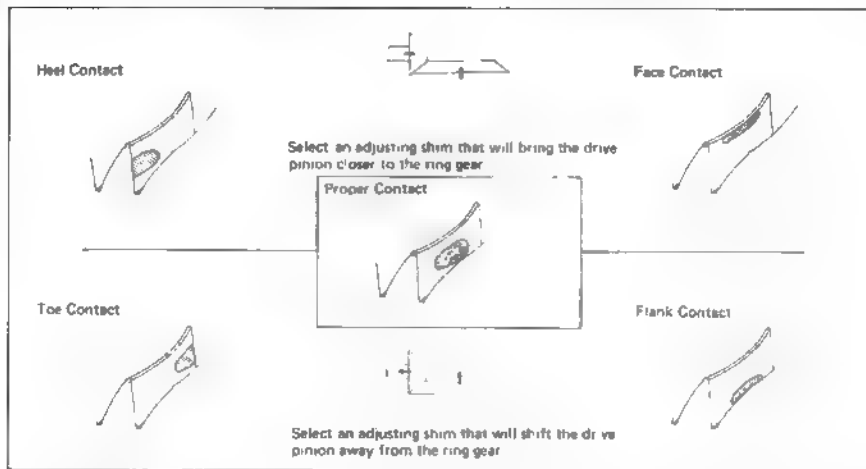
6.7 in. and LSD	3 – 5 kg-cm (2.8 – 4.3 in.-lb)
6.38 in.	2 – 4 kg-cm (1.7 – 3.5 in.-lb)

Backlash: 0.13 – 0.18 mm (0.0051 – 0.0071 in.)



6. INSPECT TOOTH CONTACT BETWEEN RING GEAR AND DRIVE PINION

- Coat red lead on 3 or 4 teeth of the ring gear at 3 different locations
- Hold the companion flange firmly and rotate the ring gear in both directions.
- Inspect the tooth pattern



If the teeth are not contacting properly, use the following chart to select a proper washer for correction.

(6.7 in. and LSD)

Washer thickness

mm (in.)

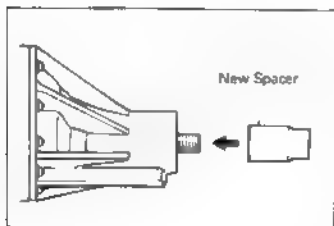
Thickness	Thickness
2.27 (0.0894)	2.51 (0.0988)
2.30 (0.0906)	2.54 (0.1000)
2.33 (0.0917)	2.57 (0.1012)
2.36 (0.0929)	2.60 (0.1024)
2.39 (0.0941)	2.63 (0.1035)
2.42 (0.0953)	2.66 (0.1047)
2.45 (0.0965)	2.69 (0.1059)
2.48 (0.0978)	

(6.38 in.)

Washer thickness

mm (in.)

Thickness	Thickness
2.52 (0.0992)	2.67 (0.1051)
2.55 (0.1004)	2.70 (0.1063)
2.58 (0.1016)	2.73 (0.1075)
2.61 (0.1028)	2.76 (0.1087)
2.64 (0.1039)	

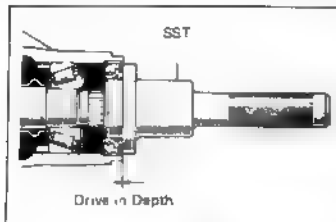


7. REMOVE COMPANION FLANGE
(See step 7 on page RA-12)

8. REMOVE FRONT BEARING
(See step 9 on page RA-12)

9. INSTALL NEW BEARING SPACER AND FRONT BEARING

- Install a new bearing spacer on the shaft
- Install the front bearing on the shaft

**10. INSTALL OIL SLINGER AND NEW OIL SEAL**

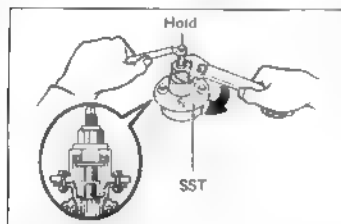
- Install the oil slinger facing as shown.
- Using SST, drive in a new oil seal

Oil seal drive in depth:

6.7 mm, and LSD 4.0 mm (0.157 in.)
 0.38 in. 0 - 0.5 mm (0 - 0.020 in.)

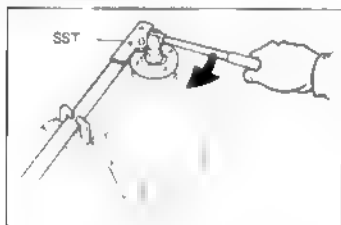
SST 09554 22010

- Apply MP grease to the oil seal lip.

**11. INSTALL COMPANION FLANGE**

- Install the companion flange with SST
 Coat the threads of the nut with MP grease.

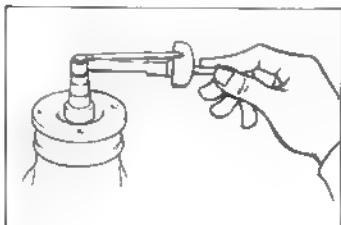
SST 09557 22022



- Coat the threads of a new nut with MP grease.
- Using SST to hold the flange, tighten and torque the nut

Torque: 1,100 kg-cm (80 ft-lb)

SST 09330-00020

**12. ADJUST FRONT BEARING PRELOAD**

Using a torque meter, measure the preload of the backlash between the drive pinion and ring gear

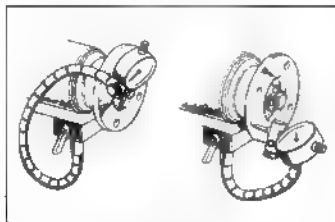
Preload

New bearing 10 - 16 kg-cm (8.7 - 13.9 in.-lb)
 Reused bearing 5 - 8 kg-cm (4.3 - 6.9 in.-lb)

- If preload is greater than specification, replace the bearing spacer.
- If preload is less than specification, retighten the nut 130 kg-cm (9 ft-lb) at a time until the specified preload is reached.

If the maximum torque is exceeded while retightening the nut, replace the bearing spacer and repeat the preload procedure. Do not back off the pinion nut to reduce the pre-

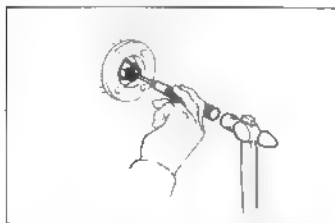
Maximum torque: 2,400 kg-cm (174 ft-lb)



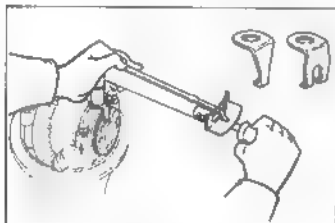
13. CHECK DEVIATION OF COMPANION FLANGE

Maximum longitudinal deviation: 0.10 mm (0.0039 in.)

Maximum latitudinal deviation: 0.10 mm (0.0039 in.)



14. STAKE DRIVE PINION NUT



15. INSTALL ADJUSTING NUT LOCKS

(a) Select either a lock No. 1 or No. 2 whichever fits the adjusting nuts.

(b) Install the lock on the bearing caps.

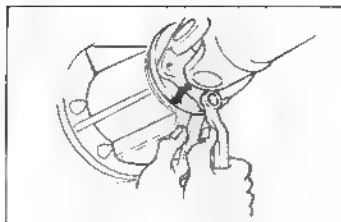
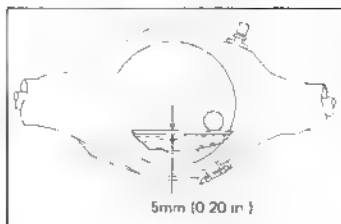
Torque: 130 kg-cm (9 ft-lb)

INSTALLATION OF DIFFERENTIAL

(See page RA-8)

1 INSTALL A NEW GASKET**2 INSTALL DIFFERENTIAL CARRIER ASSEMBLY**

Install the differential carrier assembly in the axle and install the twelve nuts.

**3. CONNECT PROPELLER SHAFT FLANGE TO COMPANION FLANGE****4. INSTALL REAR PLUG AND FILL DIFFERENTIAL WITH GEAR OIL**

Hypoid gear oil: SAE 90 API GL-5

SAE 80W or 80W 90

at temperature below -18°C (0°F)

w/LSD use LSD oil only

Capacity: 6.7 in. and LSD

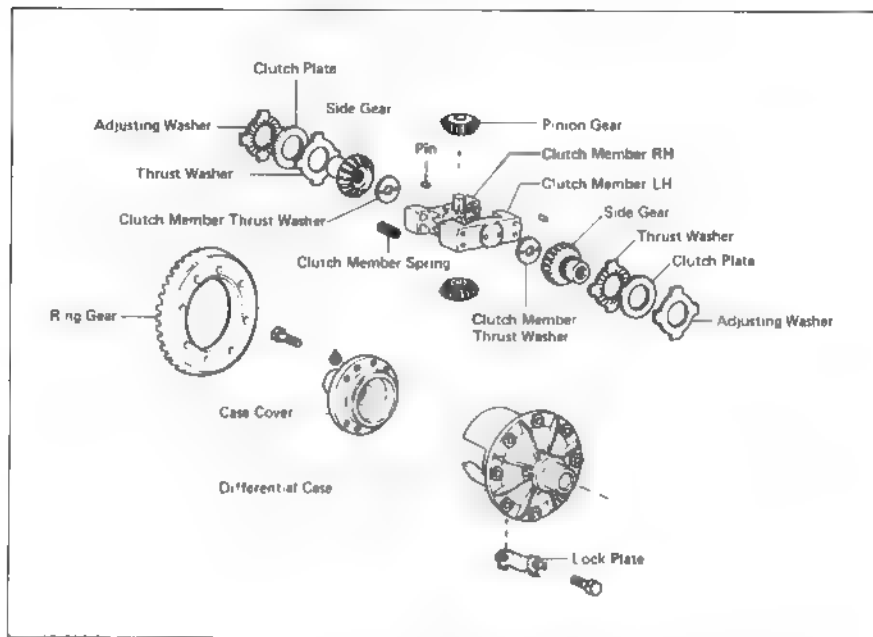
1.3 liters (1.4 US qts, 1.1 imp. qts)

6.38 in.

1.0 liters (1.1 US qts, 0.9 imp. qts)

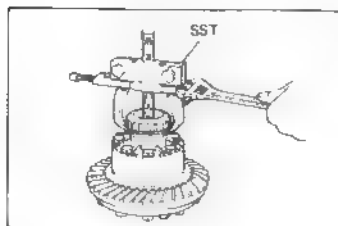
Install the filler plug.

LIMITED SLIP DIFFERENTIAL COMPONENTS



REMOVAL OF DIFFERENTIAL CASE

1. REMOVE DIFFERENTIAL (See page RA-8)
2. REMOVE DIFFERENTIAL CASE FROM CARRIER (See page RA-11)

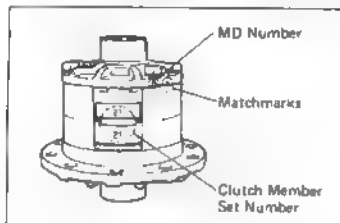


DISASSEMBLY OF LIMITED SLIP DIFFERENTIAL

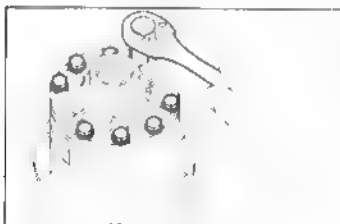
1. REMOVE SIDE BEARING
SST 09950-20014

NOTE

- If the side gear or clutch member has been replaced, be sure to replace the thrust washer contacting this part
- Any disassembled part that is to be reused must be re-assembled to its former location.

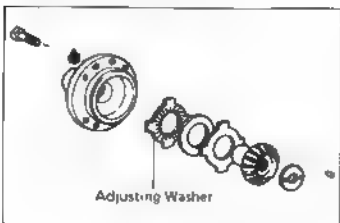


2. PUT MATCHMARKS ON CASE AND CASE COVER
3. CHECK CASE COVER MARKS AND CLUTCH MEMBER RH, LH SET NUMBER

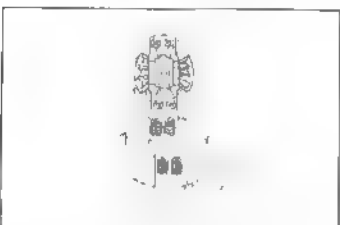


4. REMOVE CASE BOLTS AND CASE COVER WITH SIDE GEAR

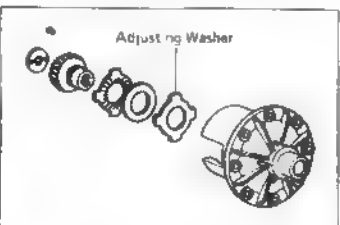
NOTE Case cover bolts have been treated with retaining compound making it difficult to loosen them. Removal will be made easier by heating the assembly to around 150°C (302°F) in an oil heater or similar means.



5. REMOVE FOLLOWING PARTS FROM CASE COVER:
 - (a) Clutch member thrust washer
 - (b) Side gear
 - (c) Thrust washer
 - (d) Clutch plate
 - (e) Adjusting washer



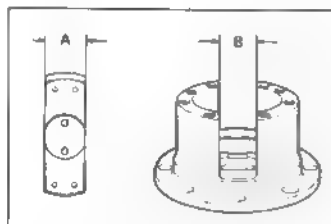
6. REMOVE FOLLOWING PARTS FROM DIFFERENTIAL CASE:
 - (a) Clutch member RH with pinion gear



- (b) Clutch member spring
- (c) Clutch member LH
- (d) Side gear and clutch member thrust washer
- (e) Thrust washer
- (f) Clutch plate
- (g) Adjusting washer

INSPECTION AND ADJUSTMENT OF DIFFERENTIAL CASE

1. REPLACE PARTS THAT ARE DAMAGED OR WORN



2. CHECK CLUTCH MEMBER LH AND DIFFERENTIAL CASE

Check the clearance between the left clutch member and differential case.

	Specifications		mm (in.)	
Clutch member (A)	36.975	36.995	(1.4557	1.4565)
Differential case (B)	37.000	37.025	(1.4567	1.4577)
Clearance	0.006 - 0.050		(0.0002 - 0.0020)	

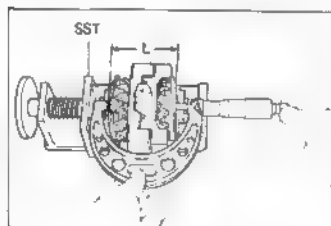
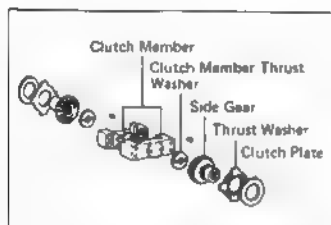
3. ADJUST SIDE GEAR THRUST CLEARANCE

NOTE: Adjust the axial clearance inside the differential case by selecting a proper thickness adjusting washer.

Standard clearance:

0.05 - 0.15 mm (0.0020 - 0.0059 in.)

(a) Clean the parts.



(b) Assemble the following parts to SST
SST 09411 22011

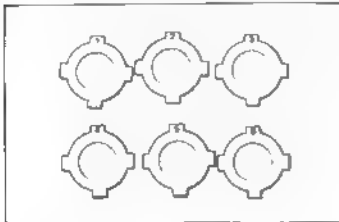
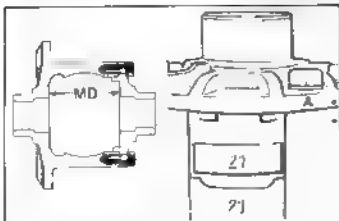
NOTE: Do not assemble the adjusting washers and clutch member springs.

- (1) Clutch plate
- (2) Side gear thrust washer
- (3) Side gear
- (4) Clutch member thrust washer
- (5) Clutch member LH
- (6) Clutch member RH
- (7) Clutch member thrust washer
- (8) Side gear
- (9) Side gear thrust washer
- (10) Clutch plate

(c) Loosen the nut of SST and hold the parts with spring tension.

(d) Using a micrometer, measure dimension "L".

NOTE: Properly align the parts to be measured and measure dimension "L", as shown, several times. Take the average of the readings.



- (e) As shown below, code letters are inscribed on the differential case in accordance with its mounting dimensions (MD)

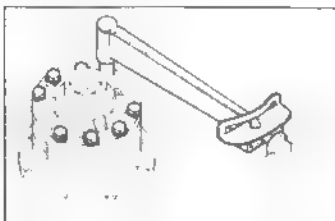
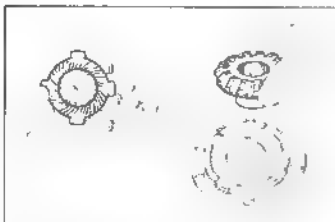
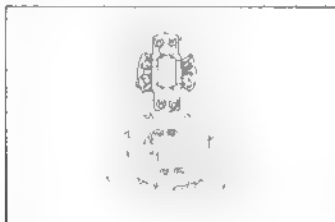
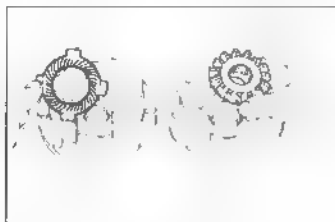
	Mounting dimension	mm (in.)
A	68.54 — 68.57	(2.6984 — 2.6998)
B	68.57 — 68.60	(2.6998 — 2.7008)
C	68.60 — 68.63	(2.7008 — 2.7020)
D	68.63 — 68.66	(2.7020 — 2.7031)
E	68.66 — 68.69	(2.7031 — 2.7043)
F	68.69 — 68.72	(2.7043 — 2.7055)

- (f) Referring to the selection table below, select the proper adjusting washers by matching the MD (inscribed on case) with the dimension L.

Adjusting washer sizes		mm (in.)	
Mark	Thickness	Mark	Thickness
1	1.60 (0.0630)	4	1.75 (0.0689)
2	1.65 (0.0650)	5	1.80 (0.0709)
3	1.70 (0.0669)	6	1.85 (0.0728)

Adjusting washer selection table

		Differential case code mark							
		A	B	C	D	E	F	G	H
L Measured assembled distance mm (in.)	64.94 (2.5567)								
	64.95 (2.5571)								
	64.96 (2.5575)								
	64.97 (2.5579)								
	64.98 (2.5583)								
	64.99 (2.5587)								
	65.00 (2.5591)								
	65.01 (2.5594)								
	65.02 (2.5598)								
	65.03 (2.5602)								
	65.04 (2.5606)								
	65.05 (2.5610)								
	65.06 (2.5614)								
	65.07 (2.5618)								
	65.08 (2.5622)								
	65.09 (2.5626)								
	65.10 (2.5630)								
	65.11 (2.5634)								
	65.12 (2.5638)								
	65.13 (2.5642)								
	65.14 (2.5646)								
	65.15 (2.5650)								
	65.16 (2.5653)								
	65.17 (2.5657)								
	65.18 (2.5661)								
	65.19 (2.5665)								
	65.20 (2.5669)								
	65.21 (2.5673)								
	65.22 (2.5677)								
	65.23 (2.5681)								
	65.24 (2.5685)								
	65.25 (2.5689)								
	65.26 (2.5693)								
	65.27 (2.5697)								
	65.28 (2.5701)								
	65.29 (2.5705)								
	65.30 (2.5709)								



(g) Install the following parts onto the differential case.

- Adjusting washer

NOTE If using washers of different thickness, install the thicker one to the differential case.

- Clutch plate
- Thrust washer
- Side gear
- Clutch member thrust washer
- Clutch member LH

NOTE: Do not install the clutch member spring

- Clutch member RH with pinion gear

(h) Install the following parts onto the differential case cover

- Adjusting washer
- Clutch plate
- Thrust washer
- Side gear
- Clutch member thrust washer

(i) Tighten the bolts to specified torque.

Torque: 450 kg-cm (33 ft-lb)

(j) Turn the side gears with the axle shaft or other means and check to see that they turn smoothly

NOTE: Reselect adjusting washers if the side gear does not turn smoothly

(k) Disassemble the differential case

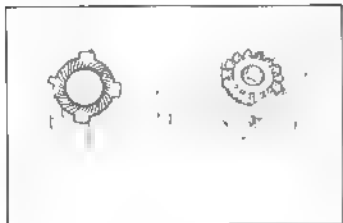
ASSEMBLY OF DIFFERENTIAL CASE

(See page RA 25)

1. WASH DIFFERENTIAL CASE ASSEMBLY

Wash the differential case and bolts with trichloroethylene

NOTE: Other cleaning solvent may be used if it has the same degreasing effect as trichloroethylene

**2. INSTALL FOLLOWING PARTS ONTO DIFFERENTIAL CASE**

NOTE: Coat the following parts of the LSD with gear oil

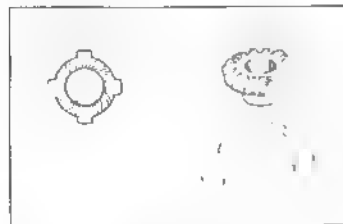
- Adjusting washer

NOTE: Face the oil groove toward the side gear

- Clutch plate
- Thrust washer
- Side gear
- Clutch member thrust washer

NOTE: Face the oil groove toward the side gear.

- Clutch member LH
- Clutch member spring
- Clutch member RH with pinion gear

**3. INSTALL FOLLOWING PARTS ONTO DIFFERENTIAL CASE COVER**

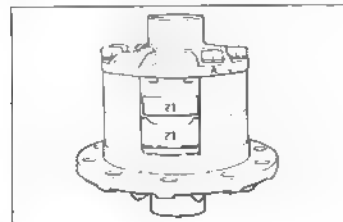
- Adjusting washer

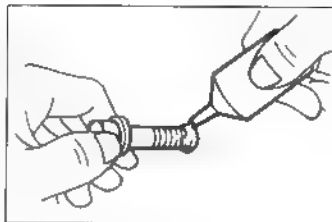
NOTE: Face the oil groove toward the clutch plate.

- Clutch plate
- Thrust washer
- Side gear
- Clutch member thrust washer

NOTE: Face the oil groove toward the side gear

Align the marks on the case and case cover





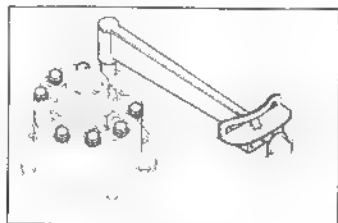
4. INSTALL CASE COVER BOLTS

(a) Apply retaining compound to the bolts

NOTE: Use Lock Tight.

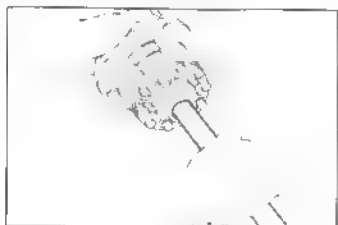
NOTE: Application of Lock Tight:

- (1) Apply Lock Tight primer T to the case threads and the mounting bolts, and allow it to dry thoroughly.
- (2) Apply Lock-Tight to the case threads and the bolts and install the bolts.
- (3) Allow to stand at least 3 hours after tightening the bolts. [In cold weather, first heat to 30 – 50°C (86 – 122°F)]



(b) Tighten the bolts uniformly and a little at a time

Torque: 450 kg-cm (33 ft lb)



5. CHECK SIDE GEAR THRUST CLEARANCE

Turn the side gear with the axle shaft or other means and check to see that they turn smoothly.

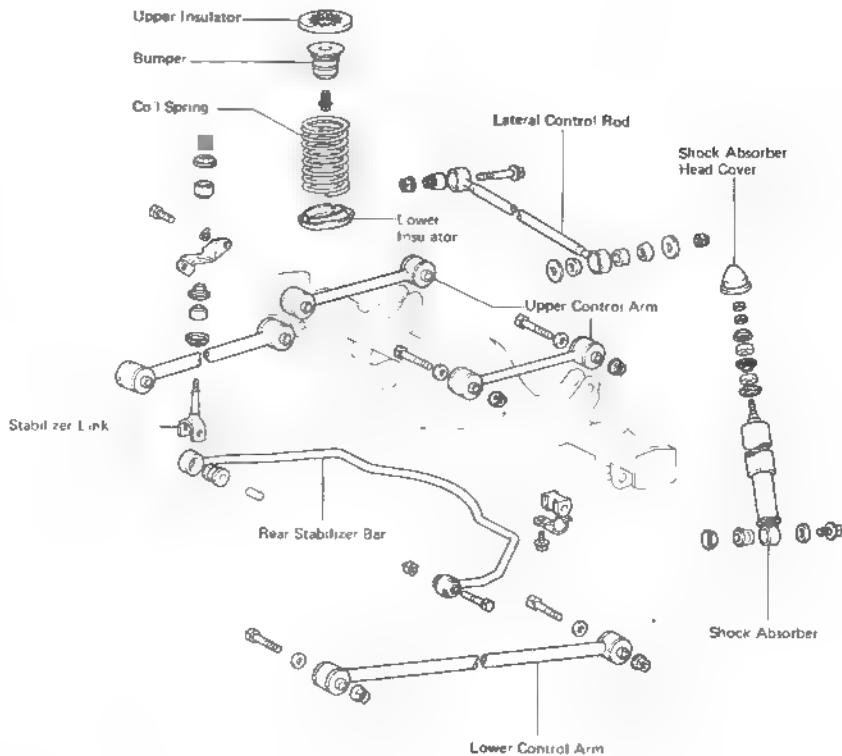
6. INSTALL SIDE BEARING (See page RA 16)

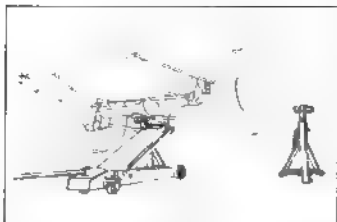
INSTALLATION OF DIFFERENTIAL

1. INSTALL DIFFERENTIAL CASE IN CARRIER
(See page RA-18)

2. INSTALLATION OF DIFFERENTIAL
(See page RA-24)

REAR SUSPENSION COMPONENTS





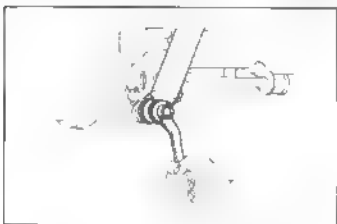
Coil Spring and Rear Shock Absorber

(See page RA-32)

REMOVAL OF COIL SPRING AND SHOCK ABSORBER

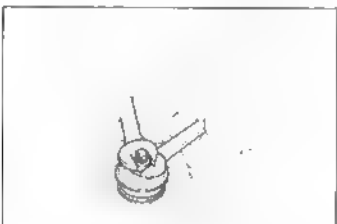
1. JACK UP VEHICLE

Jack up the rear axle housing and support the body with stands. Leave the jack under the rear axle

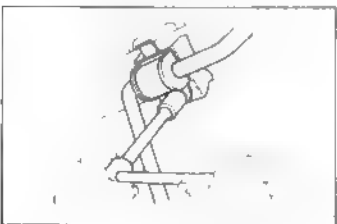


2. REMOVE REAR SHOCK ABSORBER

(a) Remove the bolt holding the shock absorber to the rear axle housing and disconnect the shock absorber

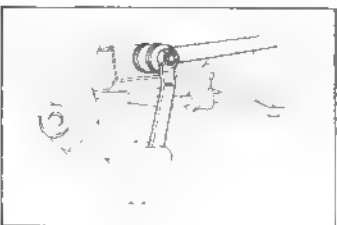


(b) If replacing the shock absorber, remove the shock absorber head cover and nut holding the shock absorber to the body, and remove the shock absorber.



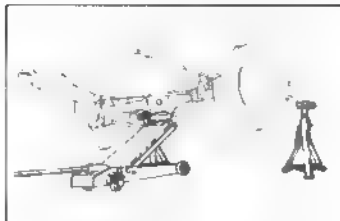
3. REMOVE STABILIZER BAR BUSHING BRACKETS

Remove the bolts holding the stabilizer bar brackets to the rear axle housing.



4. DISCONNECT LATERAL CONTROL ROD FROM REAR AXLE HOUSING

Remove the nut holding the lateral control rod to the rear axle housing and disconnect the lateral control rod.

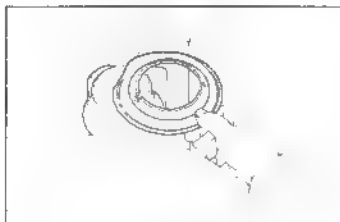
**5. REMOVE COIL SPRING**

- (a) Begin lowering the rear axle housing

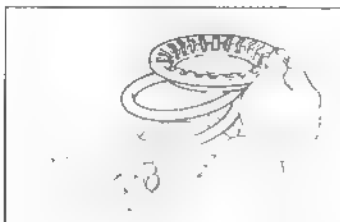
NOTE: Be careful not to pull the brake line and parking brake cable.



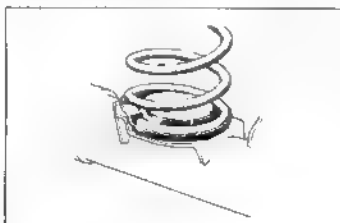
- (b) While lowering the rear axle housing, remove the coil spring and upper and lower insulators.

**INSTALLATION OF COIL SPRING AND SHOCK ABSORBER**

1. PUT LOWER INSULATOR ON AXLE HOUSING



2. PUT UPPER INSULATOR ON COIL SPRING

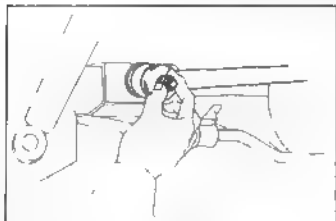


3. INSTALL COIL SPRING

4. CHECK POSITION OF LOWER INSULATOR

- (a) Jack up the rear axle housing

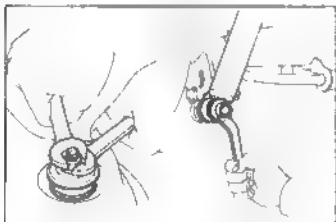
- (b) Check that the lower insulator is installed correctly.
If the insulator is not in correct position, reinstall the coil spring



5. INSTALL LATERAL CONTROL ROD

In order, install the washer, bushing, spacer, lateral control rod, bushing, washer and nut on to the rear axle housing.

NOTE Do not tighten the nut yet.



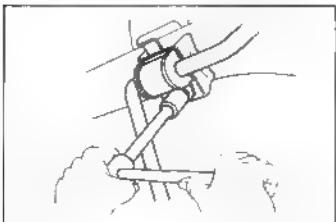
6. INSTALL SHOCK ABSORBER

- (a) Connect the shock absorber to the body with the nut. Hold the shaft with an adjustable wrench. Torque the lock nut.

Torque: 250 kg-cm (18 ft-lb)

- (b) Connect the shock absorber to the rear axle housing with the bolt. Torque the bolt.

Torque: 375 kg-cm (27 ft-lb)

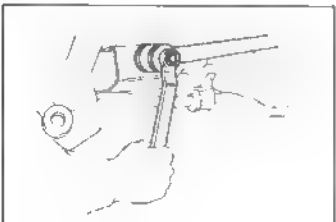


7. INSTALL STABILIZER BAR BUSHING BRACKETS TO REAR AXLE



8. STABILIZE SUSPENSION

Remove the stands and bounce the car to stabilize the suspension.

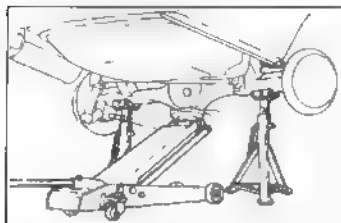


9. TIGHTEN LATERAL CONTROL ROD NUT

- (a) Raise the axle housing until the body is free from the stands.

- (b) Torque the lateral control rod nut.

Torque: 650 kg-cm (47 ft-lb)



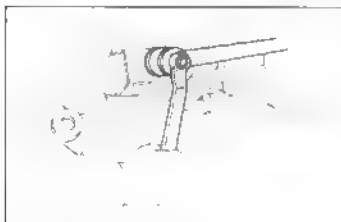
Lateral Control Rod

(See page RA-32)

REMOVAL OF LATERAL CONTROL ROD

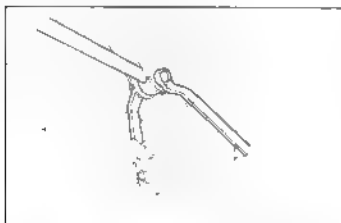
1. SUPPORT REAR AXLE HOUSING

Jack up the rear axle housing and support it with stands.



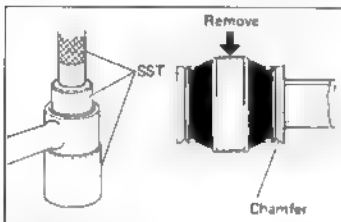
2. DISCONNECT LATERAL CONTROL ROD FROM REAR AXLE HOUSING

Remove the nut holding the lateral control rod to the rear axle housing, and disconnect the lateral control rod.



3. DISCONNECT LATERAL CONTROL ROD FROM BODY

Remove the nut holding the lateral control rod to the body, and remove the lateral control rod.



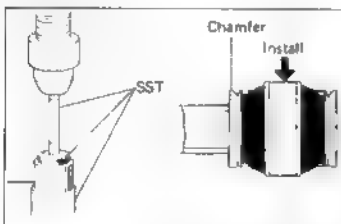
REPLACEMENT OF LATERAL CONTROL ROD BUSHING

1. REMOVE BUSHING

Using SST, press out the bushing from the lateral control rod.

SST 09710-14012

NOTE When inserting and removing the bushing, press or pull from the chamfered side as shown in the figure.

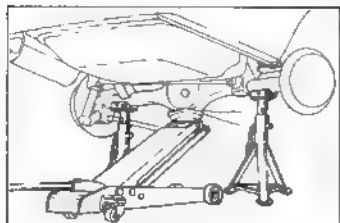


2. INSTALL BUSHING

Using SST, press a new bushing into the lateral control rod.

SST 09710-14012

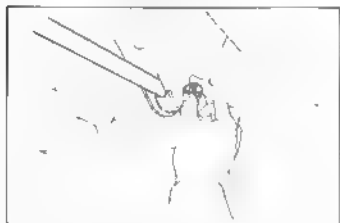
NOTE: Do not use a lubricant when pressing in the bushing.



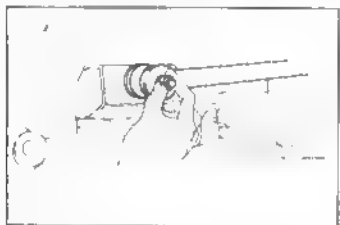
INSTALLATION OF LATERAL CONTROL ROD

1. INSTALL LATERAL CONTROL ROD TO BODY

- (a) Raise the axle housing until the housing is free from the stands.



- (b) Install the lateral control rod to the body with the nut

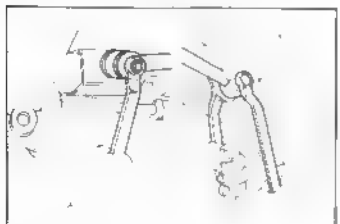


2. INSTALL LATERAL CONTROL ROD TO REAR AXLE HOUSING

- (a) In this order, install the washer, bushing, spacer, lateral control arm, bushing, washer and nut on the rear axle housing.



- (b) Remove the stands and bounce the car to stabilize the suspension.

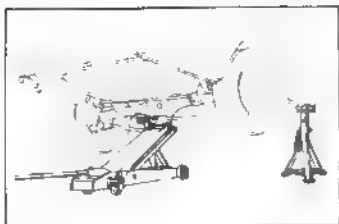


- (c) Jack up the axle housing.

- (d) Torque the nut

Torque:

Body side	1,150 kg-cm (83 ft-lb)
Axle housing side	650 kg-cm (47 ft-lb)



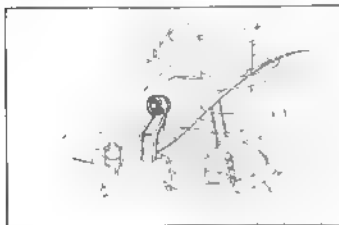
Upper and Lower Control Arm

(See page RA-32)

REMOVAL OF UPPER AND LOWER CONTROL ARM

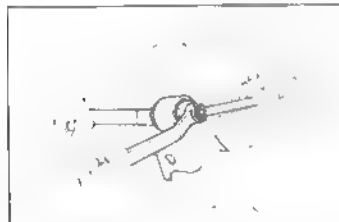
1. JACK UP VEHICLE

Jack up the vehicle and support the body with stands. Support the rear axle housing with a jack

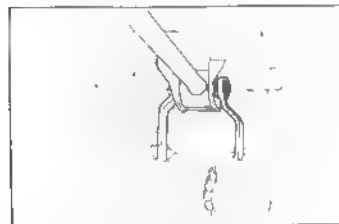


2. REMOVE UPPER CONTROL ARM

(a) Remove the bolt holding the upper control arm to the body.

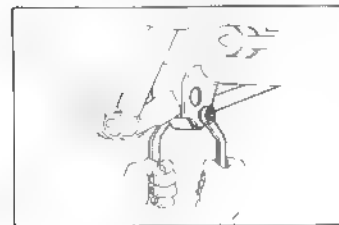


(b) Remove the bolt holding the upper control arm to the rear axle housing, and remove the upper control arm.

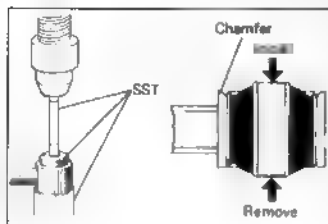


3. REMOVE LOWER CONTROL ARM

(a) Remove the bolt holding the lower control arm to the body



(b) Remove the bolt holding the lower control arm to the rear axle housing, and remove lower control arm.



REPLACEMENT OF UPPER AND LOWER CONTROL ARM BUSHING

1. REMOVE BUSHING

Using SST, press out the bushing from the control arm
SST 09710-14012

NOTE When inserting and removing the bushing, press or pull from the chamfered side as shown in the figure.

2. INSTALL BUSHING

Using SST, press a new bushing into the control arm
SST 09710-14012

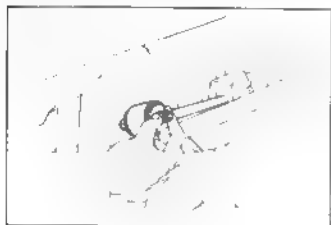
NOTE: Do not use a lubricant when pressing in the bushing.



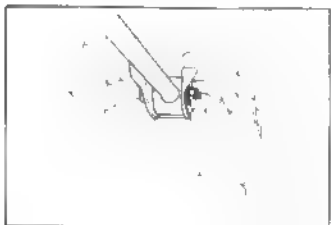
INSTALLATION OF UPPER AND LOWER CONTROL ARM

1. INSTALL UPPER CONTROL ARM

(a) Install the upper control arm on the body with the bolt and nut. Do not tighten the nut yet

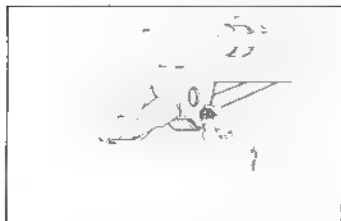


(b) Install the upper control arm on the rear axle housing with the bolt and nut. Do not tighten the nut yet.



2. INSTALL LOWER CONTROL ARM

(a) Install the lower control arm on the body with the bolt and nut. Do not tighten the nut yet

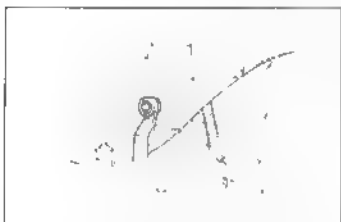


- (b) Install the lower control arm on the rear axle housing with bolt and nut. Do not tighten the nut yet.



3. STABILIZE SUSPENSION

Remove the stands and bounce the car to stabilize the suspension.

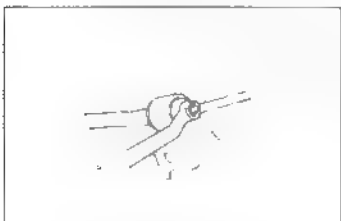


4. JACK UP VEHICLE

Raise the axle housing until the body is free from the stands.

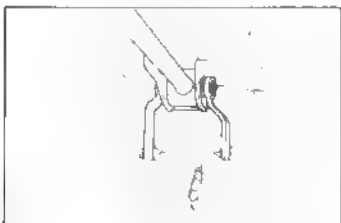
5. TIGHTEN BOLT HOLDING UPPER CONTROL ARM TO BODY

Torque: 1,200 kg-cm (87 ft-lb)



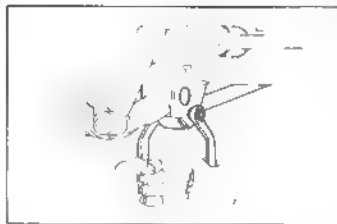
6. TIGHTEN BOLT HOLDING UPPER CONTROL ARM TO REAR AXLE HOUSING

Torque: 1,200 kg-cm (87 ft-lb)



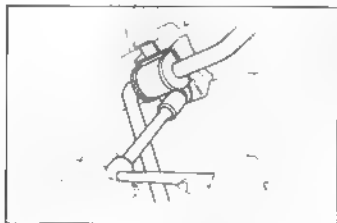
7. TIGHTEN BOLT HOLDING LOWER CONTROL ARM TO BODY

Torque: 1,200 kg-cm (87 ft-lb)



8. **TIGHTEN BOLT HOLDING LOWER CONTROL ARM TO REAR AXLE HOUSING**

Torque: 1,200 kg-cm (87 ft-lb)

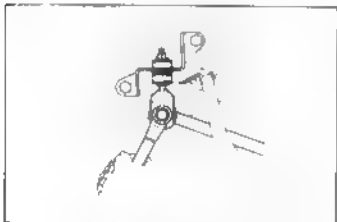


Rear Stabilizer Bar

(See page RA-32)

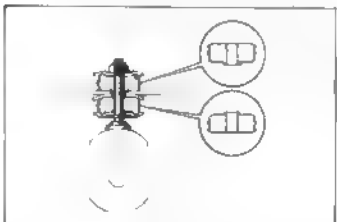
REMOVAL OF REAR STABILIZER BAR

1. **REMOVE STABILIZER BAR BUSHING BRACKETS**
2. **REMOVE BUSHINGS FROM BAR**



3. **REMOVE REAR STABILIZER BAR FROM BODY**

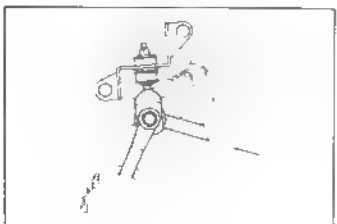
- (a) Disconnect the link from the bracket
- (b) Disconnect the link from the bar end.



INSTALLATION OF REAR STABILIZER BAR

1. **INSTALL STABILIZER LINK TO BODY**

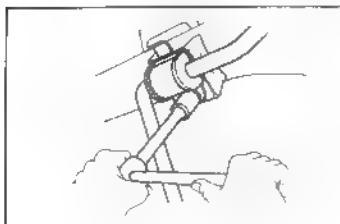
Install the link onto the body as shown



2. **INSTALL STABILIZER BAR TO LINK**

Connect the stabilizer bar on both sides to the link with bolts, collars, cushions, nut and new cotter pins.

Torque: 310 kg-cm (22 ft lb)



3. **INSTALL BRACKETS OVER BUSHING TO REAR AXLE HOUSING**

Torque: 375 kg-cm (27 ft-lb)

BRAKE SYSTEM

	Page
PRECAUTIONS	BR-2
TROUBLESHOOTING	BR 2
CHECKS AND ADJUSTMENTS	BR-6
MASTER CYLINDER	BR-9
BRAKE BOOSTER	BR-12
FRONT BRAKE	BR-23
REAR BRAKE (Drum Type)	BR-29
REAR BRAKE (Disc Type)	BR-36
BRAKE HOSES AND TUBES	BR-46

PRECAUTIONS

- (a) Care must be taken to replace each part properly as it could affect the performance of the brake system and result in a driving hazard. Replace the parts with parts of the same part number or equivalent.
- (b) It is very important to keep parts and area clean when repairing the brake system.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Low or spongy pedal	Linnings worn	Replace brake shoes or pads	BR 23,29,36
	Leak in brake system	Locate and repair	
	Master cylinder faulty	Repair or replace master cylinder	BR 9
	Air in brake system	Bleed brake system	BR-7
	Wheel cylinder faulty	Repair wheel cylinder	BR 29
	Piston seals worn or damaged	Repair brake calipers	BR 25,39
Brakes drag	Rear brake automatic adjuster faulty	Repair or replace adjuster	BR 35
	Parking brake out of adjustment	Adjust parking brake	BR 8
	Binding parking brake cable	Repair as necessary	
	Booster push rod out of adjustment	Adjust push rod	BR 21
	Return spring faulty	Replace spring	
	Brake line restricted	Repair as necessary	
	Lining cracked or distorted	Replace brake shoe	
	Wheel cylinder or caliper piston sticking	Repair as necessary	BR 25,29,39
	Automatic adjuster broken	Replace adjuster	BR 35
	Master cylinder faulty	Repair or replace master cylinder	BR 9
Brakes pull	Tires improperly inflated	Inflate tires to proper pressure	
	Oil or grease on linings	Check for cause / Replace lining	BR 23,29,36
	Brake shoes distorted, linings worn or glazed	Replace brake shoes	BR 29
	Drum or disc out of round	Replace drum or disc	BR 25,29,39
	Return spring faulty	Replace spring	
	Wheel cylinder faulty	Repair wheel cylinder	BR-29
	Piston frozen in caliper	Repair caliper	BR 25,39
	Disc brake pad sticking	Replace pads	BR 23,36
Brakes grab/chatter	Oil or grease on linings	Check for cause/Replace shoes	BR 23,29,36
	Drum or disc scored or out of round	Replace drum or disc	BR 25,29,39
	Brake shoes distorted, linings worn or glazed	Replace brake shoes	BR 29
	Wheel cylinder faulty	Repair wheel cylinder	BR 29
	Disc brake pads sticking	Replace pads	BR 23,36
	Brake booster faulty	Repair booster	BR 12

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
Hard pedal but brakes inefficient	Oil or grease on linings	Check for cause / Replace shoes	BR 23, 29, 36
	Brake shoes distorted, linings worn or glazed, drums worn	Replace brake shoes	BR 29
	Disc brake pads worn	Replace pads	BR 23, 36
	Piston frozen in caliper	Repair caliper	BR 25, 29
	Brake booster faulty	Repair booster	BR 12
	Brake line restricted	Repair as necessary	
Snapping or clicking noise when brakes are applied	Drum brakes — brake shoes binding at backing plate ledges (3 places)	Lubricate	BR 29
	Drum brakes — backing plate ledges worn (3 places)	Replace and lubricate ledges	BR 29
	Drum brakes — loose or missing hold-down spring	Replace	BR 29
	Drum brakes — looseness of set bolt at backing plate	Tighten	BR 29
	Disc brakes — rust on front edge of inboard shoes	Inspect, lubricate or replace if necessary	BR 23, 36
	Disc brakes — loose or missing pad support plate	Replace	BR 23, 36
	Disc brakes — looseness of main pin bolt	Tighten	BR 25, 39
	Disc brakes — wear on main pin	Replace	BR 25, 39
Scraping or grinding noise when brakes are applied	Worn brake linings	Replace, refinish drums or rotors if heavily scored	BR 23, 28, 36
	Caliper to wheel or rotor interference	Replace as required	BR 25, 39
	Dust cover to rotor or drum interference	Correct or replace	BR 23, 28, 36
	Other brake system components	Inspect or service	BR 25, 29, 39
	Warped or bent brake backing plate or splash shield, cracked drums or rotors		
	Tires rubbing against chassis and body	Inspect or service	

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
Squeaking, squealing, groaning or chattering noise when brakes are applied	Brake drums and linings, rotors and pads worn or scored.	Inspect, service or replace	BR 25, 29, 39
	Disc brakes — missing or damaged brake pad anti-squeal shim	Replace	BR 23, 36
	Disc brakes — burred or rusted calipers	Clean or deburr	BR 26, 39
	Dirty, greasy, contaminated or glazed linings	Clean or replace	BR 23, 36
	Improper lining parts	Check for correct parts/Replace	BR 29
	Mal-adjustment of brake pedal or booster push-rod	Inspect and adjust	BR-6, 21
	Drum brakes — weak, damaged or incorrect shoe retracting springs, loose or damaged shoe retaining pins, springs and clips and grooved backing plate ledges	Inspect, service or replace	BR-29
Squeaking and squealing noise when brakes are not applied	Bent or warped backing plate causing interference with drum	Service or replace	BR 29
	Improper machining of drum causing interference with backing plate or shoe	Replace drum	BR 29
	Mal-adjustment of brake pedal or booster push-rod	Inspect and adjust	BR-6, 21
	Poor return of brake booster or master cylinder or wheel cylinder	Inspect, service or replace	BR 9, 12, 29
	Disc brakes — rusted, stuck	Inspect and lubricate if necessary	BR 26, 39
	Other brake system components	Inspect, service or replace as required	BR 26, 29, 39
	Loose or extra parts in brakes		
	Rear drum adjustment too tight causing lining to glaze		
	Worn, damaged or insufficiently lubricated wheel bearings		FA 5
	Drum brakes — weak, damaged or incorrect shoe retracting springs	Inspect, service or replace	BR 29
	Drum brakes — grooved backing plate ledges		BR 29
	Improper positioning of pads in caliper	Inspect and service	BR 23, 36
	Outside diameter of rotor rubbing caliper housing	Inspect, correct or replace	BR 23, 36
	Housing installation of disc brake anti-rattle springs	Correct	BR 23, 36

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
Groaning, clicking or rattling noise when brakes are not applied	Stones or foreign material trapped inside wheel covers	Remove stones, etc.	
	Loose wheel nuts	Tighten to correct torque/Replace if stud holes are elongated	
	Disc brakes loose or missing anti-rattle springs or support plate or crimping on outer pad	Inspect, service or replace	BR 23,36
	Disc brakes failure of shim	Inspect and replace if necessary	BR 23,36
	Disc brakes - wear on main pin	Inspect and replace if necessary	BR 26,39
	Disc brakes - looseness of installation bolt	Inspect and tighten if necessary	BR 25,39
	Mal adjustment of brake pedal or booster push-rod	Inspect and adjust	BR 6, 21
	Disc brakes - poor return of piston	Inspect, service or replace	BR 25,39
	Drum brakes - loose or extra parts	Inspect, remove or service	BR 29
	Worn, damaged or dry wheel bearings	Inspect, lubricate or replace	FA-6

CHECKS AND ADJUSTMENTS

CHECK AND ADJUSTMENT OF BRAKE PEDAL

1. CHECK THAT PEDAL HEIGHT IS CORRECT, AS SHOWN

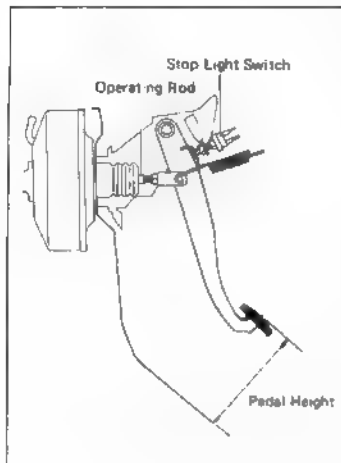
Pedal height from asphalt sheet:

LHD 161 – 171 mm (6.34 – 6.73 in.)

RHD 162 – 172 mm (6.38 – 6.77 in.)

2. IF NECESSARY, ADJUST PEDAL HEIGHT

- (a) Remove the instrument lower finish panel and air duct.
- (b) Sufficiently loosen the stop light switch.
- (c) Adjust the pedal height by turning the operating rod.
- (d) Return the stop light switch until it lightly contacts the pedal stopper.
- (e) After adjusting the pedal height, check and adjust the pedal freeplay.



3. CHECK THAT PEDAL FREEPLAY IS CORRECT, AS SHOWN

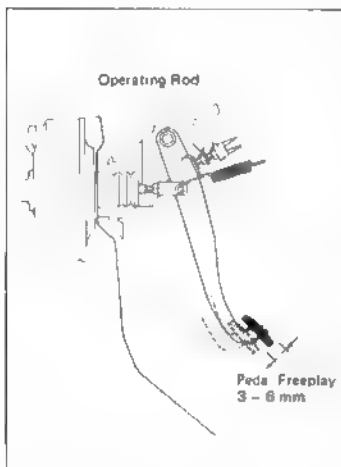
- (a) Stop the engine and depress the brake pedal several times until there is no more vacuum left in the booster.
- (b) Push in the pedal until the beginning of resistance is felt. Measure the distance, as shown.

Pedal freeplay: 3 – 6 mm (0.12 – 0.24 in.)

NOTE: The pedal freeplay is the amount of the stroke until the booster air valve is moved by the operating rod.

4. IF NECESSARY, ADJUST PEDAL FREEPLAY

- (a) If incorrect, adjust the pedal freeplay by turning the operating rod.
- (b) Start the engine and confirm that pedal freeplay exists.
- (c) After adjusting the pedal freeplay, check the pedal height.
- (d) Install the air duct and instrument lower finish panel.



5. CHECK THAT PEDAL RESERVE DISTANCE IS CORRECT, AS SHOWN

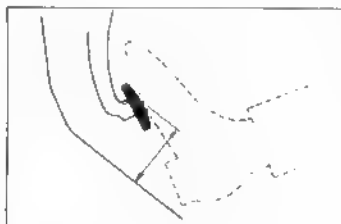
Release the parking brake.

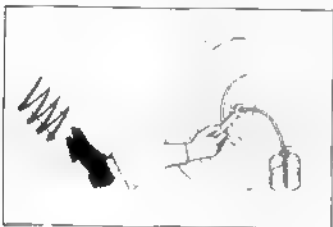
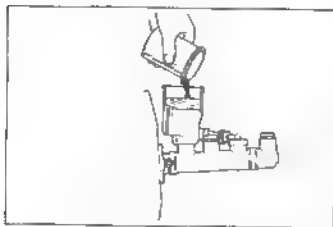
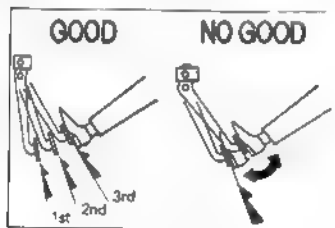
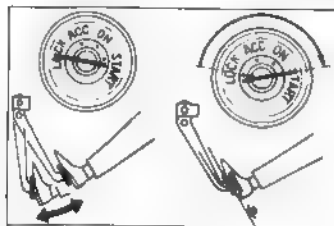
With engine running, depress the pedal and measure the pedal reserve distance, as shown.

Pedal reserve distance from asphalt sheet at 50 kg (110.2 lb):

More than 75 mm (2.95 in.)

If incorrect, troubleshoot the brake system.





OPERATIONAL TEST OF BRAKE BOOSTER

NOTE. If available, use a brake booster tester to check the booster operating condition.

1. OPERATING CHECK

- Depress the brake pedal several times with the engine off, and check that there is no change in the pedal reserve distance.
- Depress the brake pedal and start the engine. If the pedal goes down slightly, operation is normal.

2. AIR TIGHTNESS

- Start the engine and stop it after one or two minutes. Depress the brake pedal several times slowly. If the pedal goes down further the first time, but gradually rises after the second or third time, the booster is air tight.
- Depress the brake pedal while the engine is running, and stop it with the pedal depressed. If there is no change in pedal reserve travel after holding the pedal for thirty seconds, the booster is air tight.

BLEEDING OF BRAKE SYSTEM

NOTE: If any work is done on the brake system or if air is suspected in the brake lines, bleed the system of air.

CAUTION Do not let brake fluid remain on a painted surface. Wash it off immediately.

1. FILL BRAKE RESERVOIR WITH BRAKE FLUID

Check the reservoir after bleeding each wheel. Add fluid, if necessary.

2. BEGIN BLEEDING AIR FROM WHEEL CYLINDER WITH LONGEST HYDRAULIC LINE

3. CONNECT VINYL TUBE TO WHEEL CYLINDER OR BRAKE CYLINDER BLEEDER PLUG

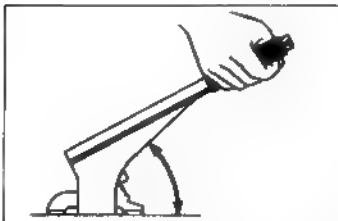
Insert the other end of the tube in a half filled container of brake fluid.

4. BLEED BRAKE LINE

- Slowly pump the brake pedal several times.
- While an assistant depresses the pedal, loosen the bleeder plug until fluid starts to run out. Then close the bleeder plug.
- Repeat this procedure until there are no more air bubbles in the fluid.

Bleeder plug tightening torque: 85 kg-cm (74 in. lb)

5. REPEAT PROCEDURE FOR EACH WHEEL



CHECK AND ADJUSTMENT OF PARKING BRAKE

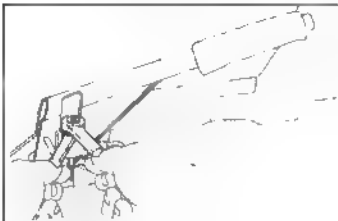
1 CHECK THAT PARKING BRAKE LEVER TRAVEL IS CORRECT

Pull the parking brake lever all the way up, and count the notches of lever travel.

Parking brake lever travel at 20 kg (44.1 lb):

w/Rear brake drum 5 – 8 clicks

w/Rear brake disc 8 – 9 clicks



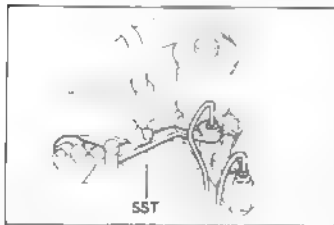
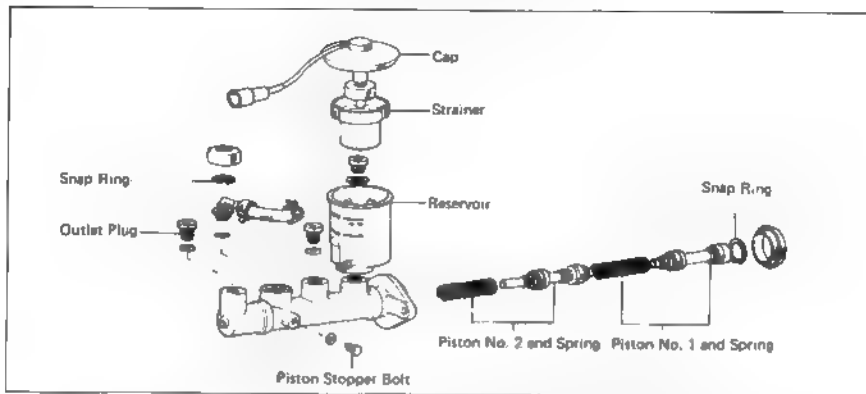
2. IF NECESSARY, ADJUST PARKING BRAKE

NOTE. Before adjusting the parking brake, be sure that the rear brake shoe clearance has been adjusted.

For shoe clearance adjustment, see step 8 on page BR 35.

- (a) Remove the rear console box.
- (b) Loosen the lock nut and turn the adjusting screw until the travel is correct.
- (c) Tighten the lock nut and install the console box.

MASTER CYLINDER COMPONENTS



REMOVAL OF MASTER CYLINDER

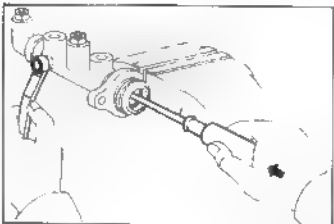
1. TAKE OUT FLUID WITH SYRINGE OR SUCH
CAUTION. Do not let brake fluid remain on a painted surface. Wash it off immediately.
2. DISCONNECT TWO BRAKE TUBES
Using SST, disconnect two brake tubes from the master cylinder.
SST 09751 36011



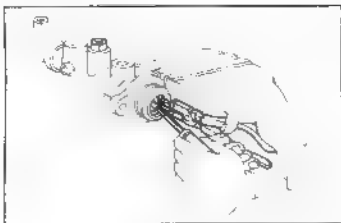
3. REMOVE MASTER CYLINDER
 - (a) Disconnect brake warning connector.
 - (b) Remove the two nuts.
 - (c) Remove the master cylinder and gasket from the brake booster

DISASSEMBLY OF MASTER CYLINDER

1. PLACE CYLINDER IN VISE
2. DISCONNECT RESERVOIR AND HOSE
 - (a) Remove the set bolt from the reservoir.
 - (b) Remove the reservoir with the hose from the master cylinder



3. REMOVE PISTON STOPPER BOLT
Using a screwdriver, push the pistons in all the way, and remove the piston stopper bolt

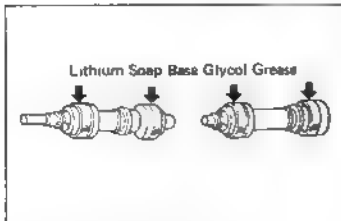


4. REMOVE TWO PISTONS AND SPRINGS

- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove two pistons and springs from the master cylinder

NOTE: It may be necessary to inject compressed air into the outlet plug to force out the No. 2 Piston.

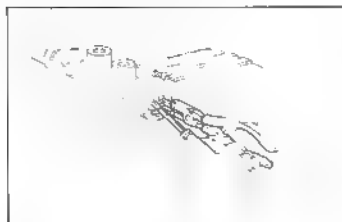
5. REMOVE TWO OUTLET PLUGS



ASSEMBLY OF MASTER CYLINDER

(See page BR-9)

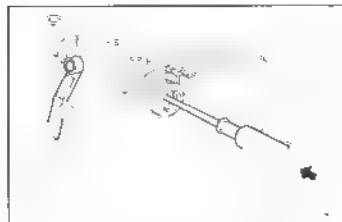
1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO RUBBER PARTS OF PISTON



2. INSTALL TWO SPRINGS AND PISTONS

CAUTION: Be careful not to damage the rubber lips on the pistons.

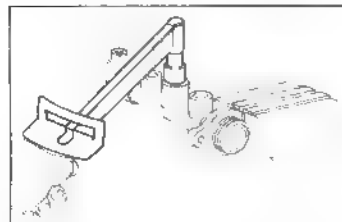
- (a) Insert the two springs and pistons in the master cylinder housing.
- (b) Push in the piston and install the snap ring.



3. INSTALL PISTON STOPPER BOLT

Using a screwdriver, push the pistons in all the way, and install the piston stopper bolt. Torque the bolt.

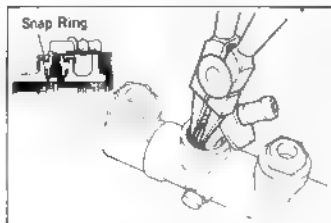
Torque: 100 kg-cm (7 ft-lb)



4. INSTALL TWO OUTLET PLUGS

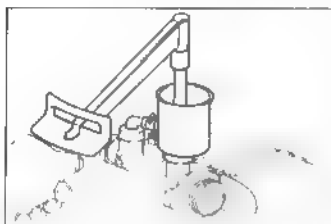
Torque the outlet plugs.

Torque: 450 kg-cm (33 ft-lb)



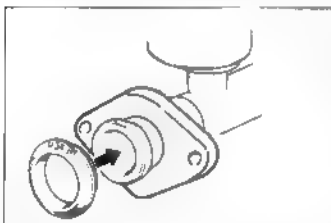
5. INSTALL RESERVOIR AND HOSE

- Push in the elbow and install the snap ring
- Apply lithium soap base glycol grease to the O-ring
- Pack lithium soap base glycol grease between the snap ring and elbow



- Install the reservoir on the master cylinder with the "MAX" mark facing toward the front. Torque the bolt

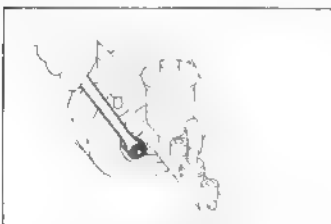
Torque: 250 kg-cm (18 ft-lb)



INSTALLATION OF MASTER CYLINDER

(See page BR-9)

- CLEAN OUT GROOVE ON LOWER INSTALLATION SURFACE OF MASTER CYLINDER
- CONFIRM THAT "UP" MARK ON MASTER CYLINDER BOOT IS IN CORRECT POSITION

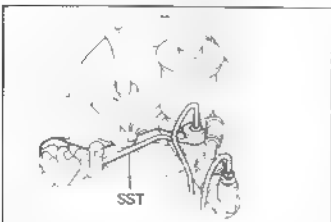


- ADJUST LENGTH OF BRAKE BOOSTER PUSH ROD BEFORE INSTALLING MASTER CYLINDER (See page BR-17)

4. INSTALL MASTER CYLINDER

Install the master cylinder and gasket on the brake booster with two nuts. Torque the nuts.

Torque: 130 kg-cm (9 ft-lb)



5. CONNECT TWO BRAKE TUBES

Using SST, connect two brake tubes to the outlet plugs. Torque the nuts.

SST 09751 36011

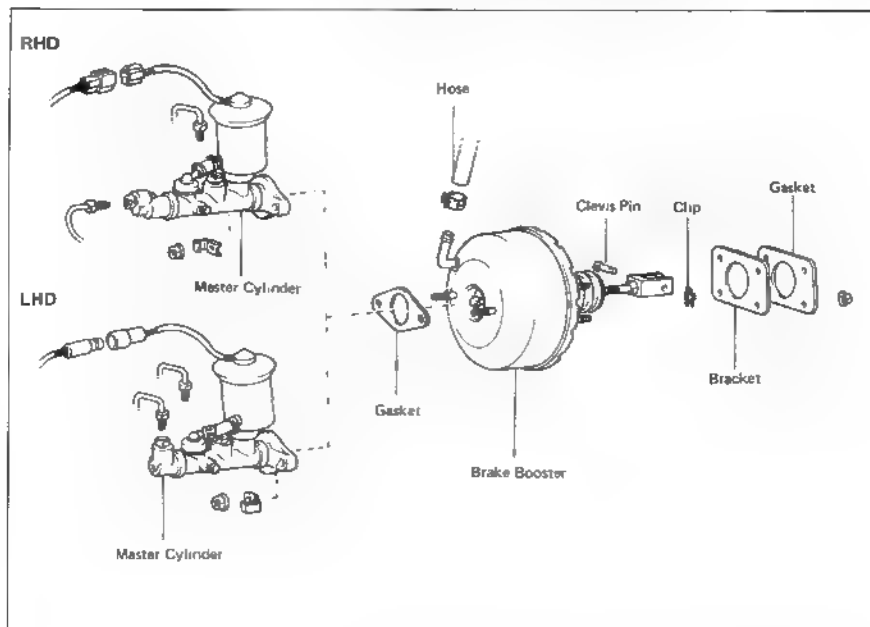
Torque: 155 kg-cm (11 ft-lb)

6. ADJUST BRAKE PEDAL (See page BR-6)

- FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR 7)

BRAKE BOOSTER

REMOVAL OF BRAKE BOOSTER



1. REMOVE MASTER CYLINDER (See page BR 9)
2. DISCONNECT VACUUM HOSE FROM BRAKE BOOSTER
3. REMOVE INSTRUMENT LOWER FINISH PANEL AND AIR DUCT
4. REMOVE CLUTCH MASTER CYLINDER, PEDAL RETURN SPRING AND CLEVIS PIN (RHD with 4A-G Engine only)

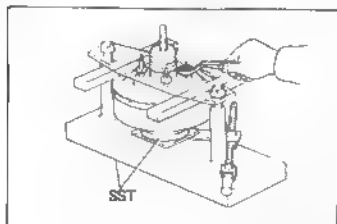
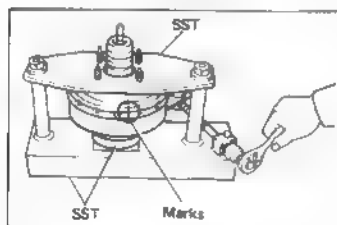
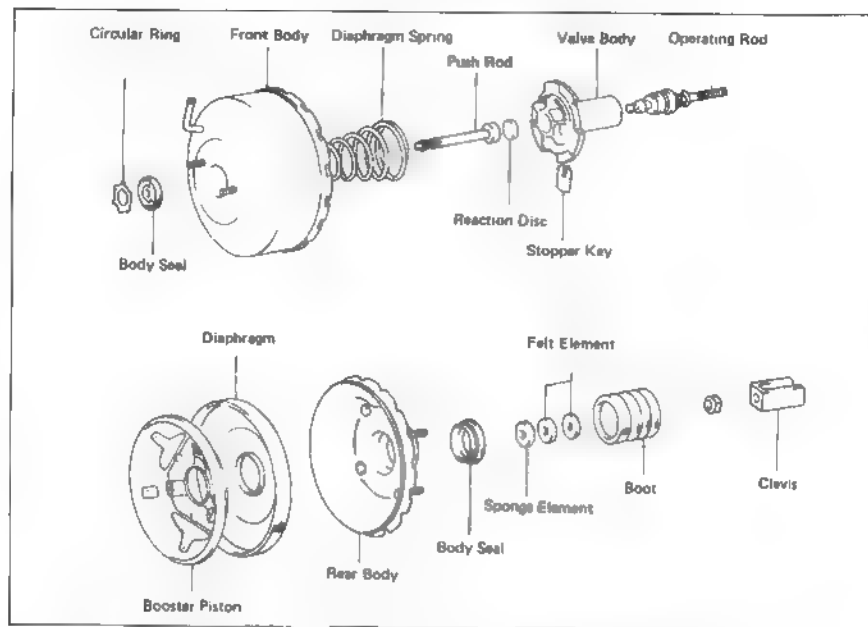
NOTE Do not disconnect the clutch line tube

5. REMOVE PEDAL RETURN SPRING
6. REMOVE CLIP AND CLEVIS PIN
7. REMOVE BRAKE BOOSTER, BRACKET, AND GASKET

Remove the four nuts, and pull out the brake booster, bracket and gasket



Brake Booster (AISIN Type) COMPONENTS



DISASSEMBLY OF BRAKE BOOSTER

1. REMOVE CLEVIS

2. SEPARATE FRONT AND REAR BODIES

- Put an matchmarks on the front and rear bodies
- Set the booster in SST

SST 09753 00012, 09753-40010 and 09753-40020

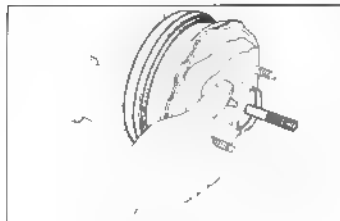
CAUTION: Be careful not to tighten the two nuts of the SST too tight.

- Turn the front body, clockwise until the front and rear bodies separate.
- Loosen the upper left and right nuts of the SST, and insert pieces of wood between the front body and upper plate.

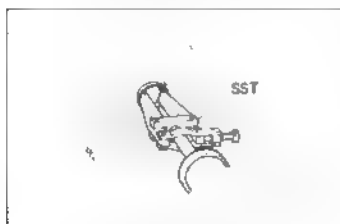
CAUTION: Be careful that the pieces of wood do not contact the rear body

- Evenly tighten down the four booster mounting nuts to separate the front and rear bodies
- Remove the diaphragm spring and push rod.

3. REMOVE BOOT FROM REAR BODY

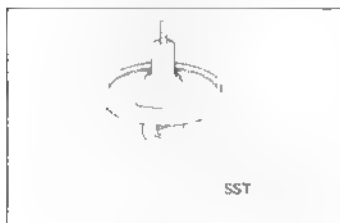


4. **REMOVE DIAPHRAGM ASSEMBLY FROM REAR BODY**



5. **REMOVE BODY SEAL FROM REAR BODY**

Using SST, remove the seal
SST 08308 00010



6. **REMOVE VALVE BODY AND DIAPHRAGM FROM BOOSTER PISTON**

(a) Mount SST in a vise.

SST 08736-27010

(b) Put the diaphragm assembly on SST and turn it to separate the valve body and booster piston

(c) Remove the diaphragm from the booster piston

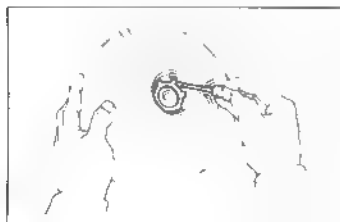


7. **REMOVE OPERATING ROD FROM VALVE BODY**

(a) Push the operating rod in the valve body and remove the stopper key

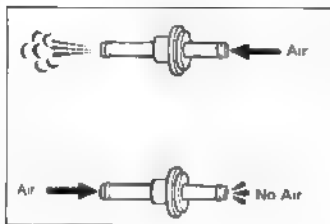
(b) Pull out the operating rod with the three elements

8. **REMOVE REACTION DISC FROM VALVE BODY**



9. **REMOVE BODY SEAL FROM FRONT BODY**

Using a screwdriver, pry out the circular ring, and remove the seal



INSPECTION OF BRAKE BOOSTER

INSPECT CHECK VALVE OPERATION

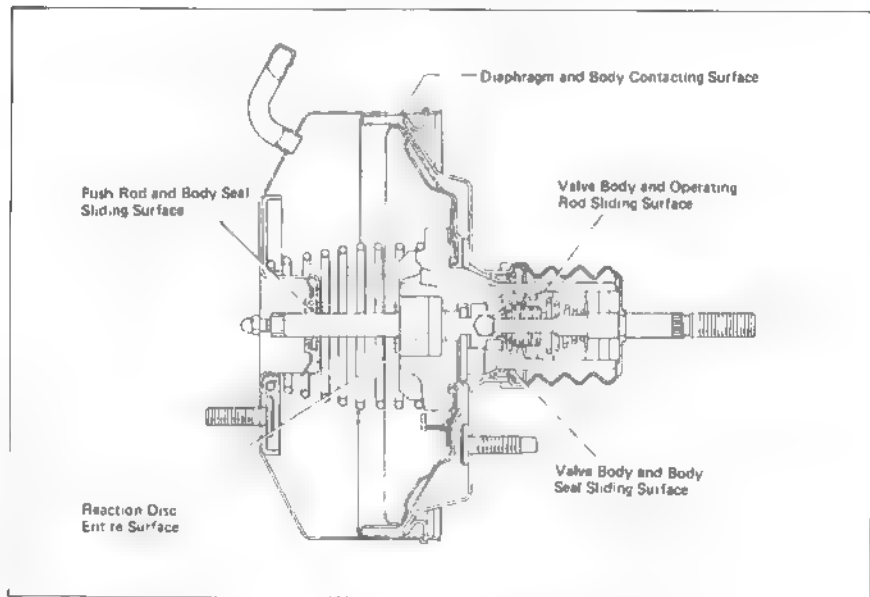
- Check that air flows from the booster side to the hose side
- Check that air does not flow from the hose side to the booster side

Replace, if necessary

ASSEMBLY OF BRAKE BOOSTER

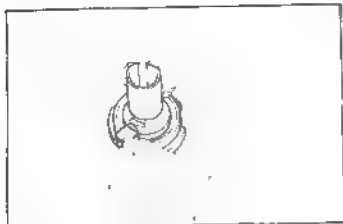
(See page BR-13)

- APPLY SILICONE GREASE TO PARTS SHOWN BELOW



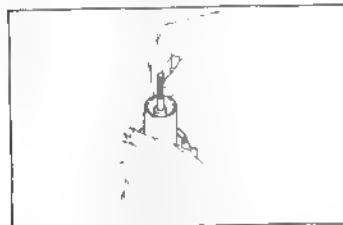
- INSTALL BODY SEAL TO FRONT BODY

- Place the body seal in position.
- Secure the body seal with the circular ring.



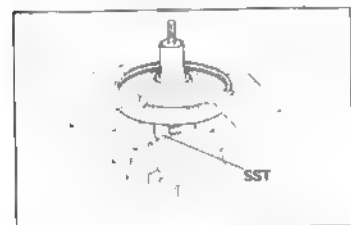
3. INSTALL OPERATING ROD TO VALVE BODY

- (a) Insert the operating rod into the valve body.
- (b) Push the operating rod into the valve body and install the stopper key



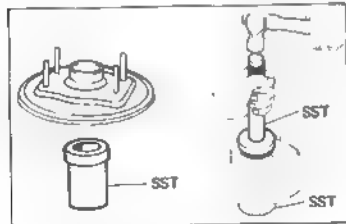
- (c) Pull on the operating rod and confirm that the stopper key is working.

4. INSTALL REACTION DISC TO VALVE BODY



5. INSTALL VALVE BODY AND DIAPHRAGM TO BOOSTER PISTON

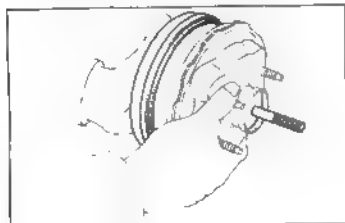
- (a) Install the diaphragm to the booster piston.
- (b) Insert the valve body to the booster piston.
- (c) Mount SST in a vise.
- (d) Put the diaphragm assembly on SST, and turn it to install



6. INSTALL BODY SEAL TO REAR BODY

Using SST, drive in the seal

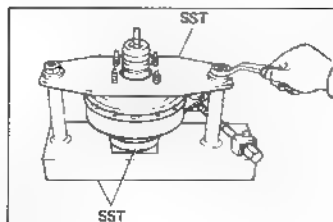
SST 09515-30010 and 09608-20011



7. INSTALL DIAPHRAGM ASSEMBLY TO REAR BODY

8. INSTALL FOLLOWING PARTS TO REAR BODY:

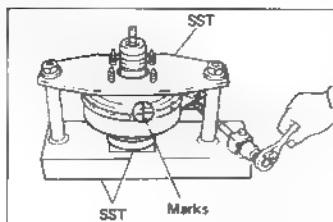
- (a) Felt elements
- (b) Sponge element
- (c) Boot

**9. ASSEMBLE FRONT AND REAR BODIES**

- (a) Place the spring and push rod in the front body
- (b) Using SST, compress the spring between the front and rear bodies.

SST 09753-00012, 09753-40010 and 09753-40020

CAUTION: Be careful not to tighten the two nuts of the SST too tight.



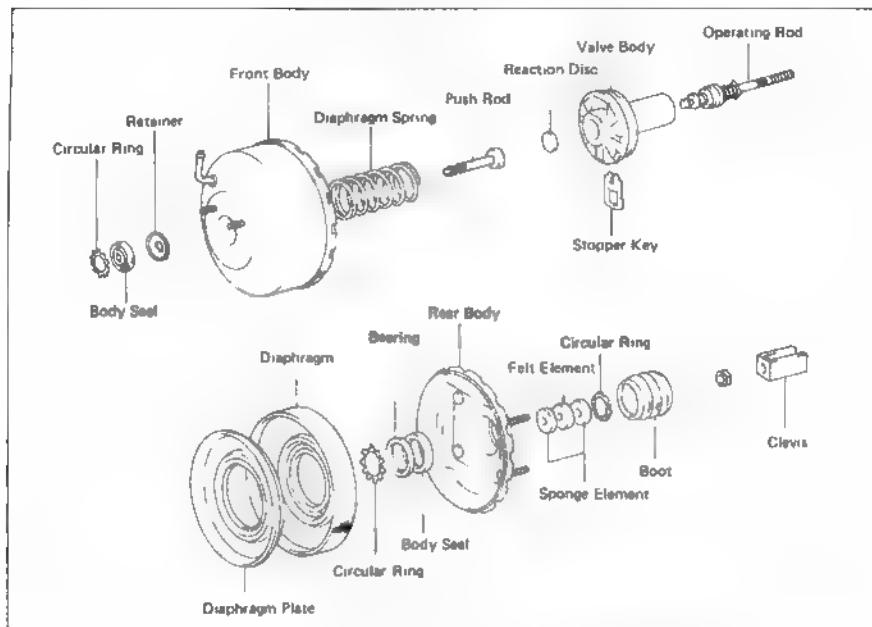
- (c) Assemble the front and rear bodies by turning the front body counterclockwise until the matchmarks match.

NOTE: If the front body is too tight to be turned, apply more silicone grease on the diaphragm edge that contacts the front and rear bodies.

10. INSTALL CLEVIS**INSTALLATION OF BRAKE BOOSTER**

(See pages BR-21, 22)

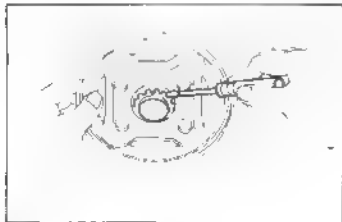
Brake Booster (JKC Type) COMPONENTS

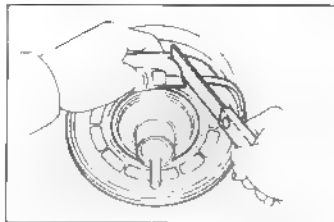


DISASSEMBLY OF BRAKE BOOSTER

1. REMOVE CLEVIS
2. SEPARATE FRONT AND REAR BODIES
(See step 2 on page BR-13)
3. REMOVE BOOT FROM REAR BODY
4. REMOVE DIAPHRAGM ASSEMBLY FROM REAR BODY (See step 4 on page BR-14)
5. REMOVE BEARING AND BODY SEAL FROM REAR BODY

Using a screwdriver, pry out the circular ring, and remove the bearing and body seal

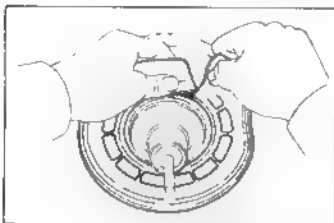




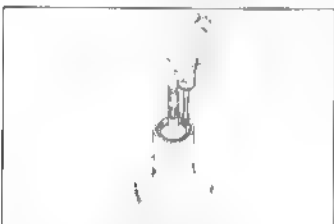
6. REMOVE VALVE BODY AND DIAPHRAGM FROM DIAPHRAGM PLATE

(a) Using a knife, cut off the diaphragm

CAUTION: Be careful not to damage the valve body when cutting the diaphragm.



(b) Pull out the diaphragm and remove the valve body

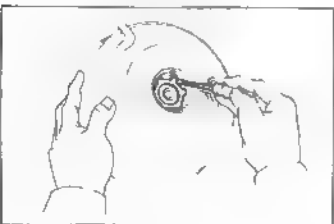


7. REMOVE OPERATING ROD FROM VALVE BODY

(a) Using a screwdriver, pry out the circular ring

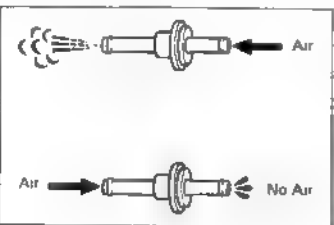
(b) Remove the operating rod.
(See step 7 on page BR 14)

8. REMOVE REACTION DISC FROM VALVE BODY



9. REMOVE BODY SEAL AND RETAINER FROM FRONT BODY

Using a screwdriver pry out the circular ring, and remove the body seal and retainer



INSPECTION OF BRAKE BOOSTER

INSPECT CHECK VALVE OPERATION

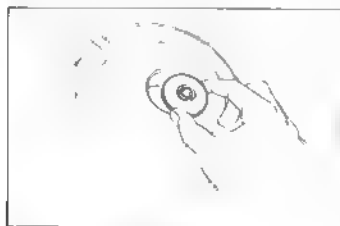
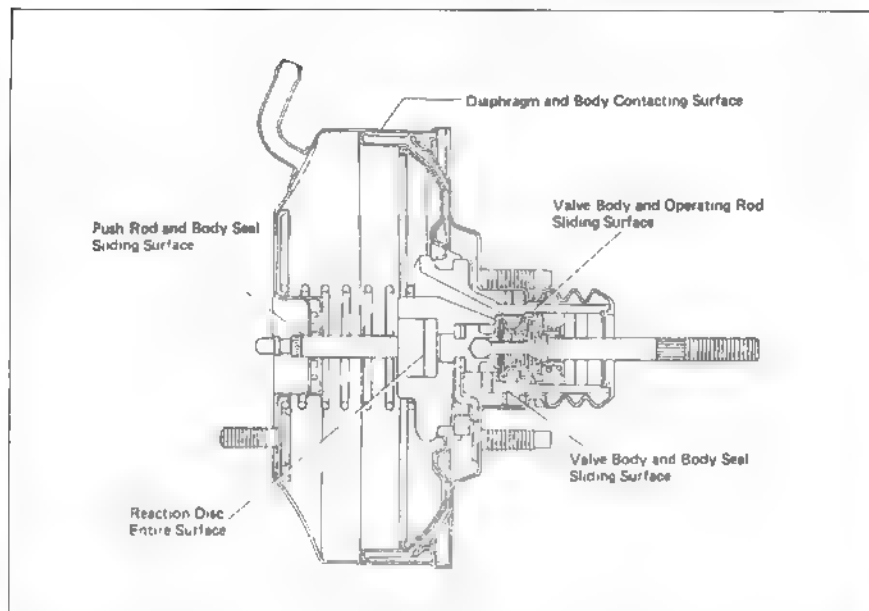
(a) Check that air flows from the booster side to the hose side

(b) Check that air does not flow from hose side to the booster side.

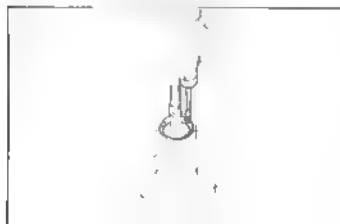
Replace, if necessary.

ASSEMBLY OF BRAKE BOOSTER

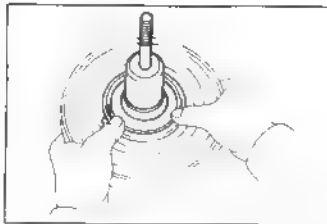
(See page BR-18)

1. APPLY SILICONE GREASE TO PARTS SHOWN BELOW**2. INSTALL BODY SEAL AND RETAINER TO FRONT BODY**

- (a) Place the retainer and body seal in position.
- (b) Secure the body seal with the circular ring.

3. INSTALL OPERATING ROD TO VALVE BODY
(See step 3 on page BR 18)**4. INSTALL REACTION DISC TO VALVE BODY****5. INSTALL AIR FILTER ELEMENTS**

- (a) Install the felt element and sponge elements.
- (b) Secure the elements with the circular ring.



6. INSTALL VALVE BODY AND DIAPHRAGM TO DIAPHRAGM PLATE

- (a) Insert the valve body in the diaphragm plate.
- (b) Install the diaphragm between the diaphragm plate and valve body



7. INSTALL BODY SEAL AND BEARING TO REAR BODY

- (a) Place the body seal and bearing in position.
- (b) Secure the bearing with the circular ring.

8. INSTALL DIAPHRAGM ASSEMBLY TO REAR BODY (See step 7 on page BR-16)

9. INSTALL BOOT TO REAR BODY

10. ASSEMBLY FRONT AND REAR BODIES (See step 9 on page BR-17)

11. INSTALL CLEVIS

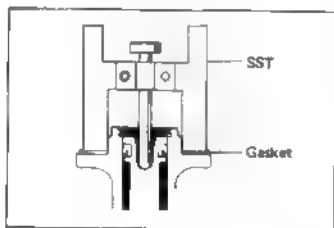
INSTALLATION OF BRAKE BOOSTER

(See page BR-12)

1. ADJUST LENGTH OF BOOSTER PUSH ROD

- (a) Set SST on the master cylinder with the gasket, and lower the pin until its tip slightly touches the piston.

SST 09737 00010

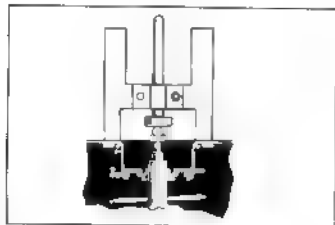


- (b) Turn SST upside down, and set it on the booster

SST 09737 00010

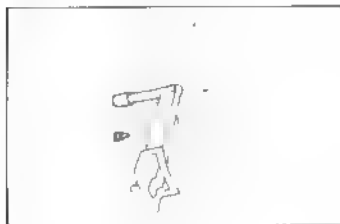
- (c) Measure the clearance between the booster push rod and pin head (SST)

Clearance: 0 mm (0 in.)





- (d) Adjust the booster push rod length until the push rod lightly touches the pin head.



2. INSTALL BRAKE BOOSTER, BRACKET, AND GASKET

Torque: 130 kg-cm (9 ft lb)

3. CONNECT CLEVIS TO BRAKE PEDAL

Insert the clevis pin into the clevis and brake pedal and install the clip to the clevis pin

4. INSTALL PEDAL RETURN SPRING

5. INSTALL CLUTCH MASTER CYLINDER, CLEVIS PIN AND PEDAL RETURN SPRING
(RHD with 4A-G Engine only)

6. INSTALL INSTRUMENT LOWER FINISH PANEL AND AIR DUCT

7. INSTALL MASTER CYLINDER
(See page BR-11)

8. CONNECT HOSE TO BRAKE BOOSTER

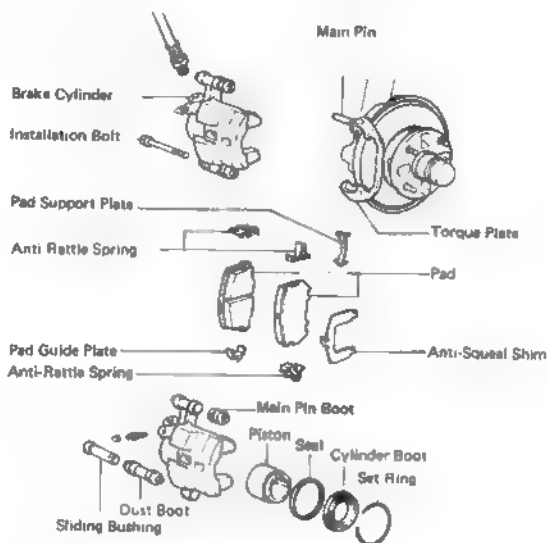
9. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR 7)

10. CHECK FLUID LEAKAGE

11. CHECK AND ADJUST BRAKE PEDAL
(See page BR-6)

12. PERFORM OPERATIONAL CHECK
(See page BR-7)

FRONT BRAKE COMPONENTS



Inspection Hole



REPLACEMENT OF BRAKE PADS

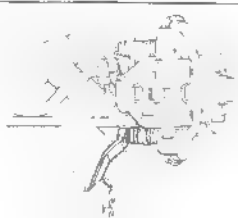
1. INSPECT PAD THICKNESS

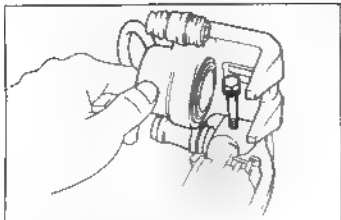
Check pad thickness through the cylinder inspection hole and replace pads if not within specification

Minimum thickness: 1.0 mm (0.039 in.)

2. DRAW OUT A SMALL AMOUNT OF BRAKE FLUID

3. REMOVE CYLINDER INSTALLATION BOLT



**4. LIFT UP CYLINDER**

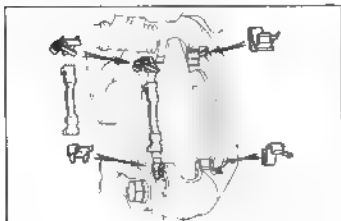
- (a) Lift up the cylinder.
- (b) Insert a bolt into the torque plate hole to secure the cylinder.

5. REMOVE PADS AND ANTI-SQUEAL SHIM**6. REMOVE ANTI-RATTLE SPRINGS, PAD GUIDE PLATE AND SUPPORT PLATE****7. CHECK ROTOR DISC THICKNESS**

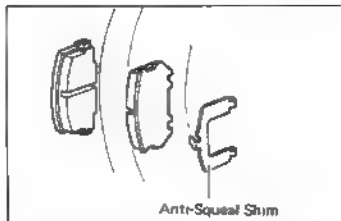
(See step 2 on page BR-26)

8. CHECK ROTOR DISC RUNOUT

(See step 3 on page BR-27)

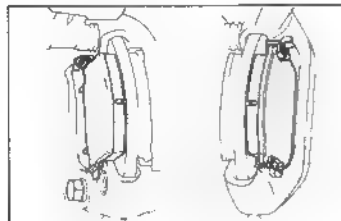
9. INSTALL NEW PAD SUPPORT PLATE, NEW PAD GUIDE PLATE AND NEW ANTI-RATTLE SPRINGS**10. PUSH PISTON INTO CYLINDER****11. INSTALL NEW PADS AND NEW ANTI-SQUEAL SHIM**

- (a) Install the anti-squeal shim toward the vehicle outside of the pad.



- (b) Install the pads onto each spring.

CAUTION: Do not allow oil or grease to touch the rubbing face.

**12. LOWER CYLINDER**

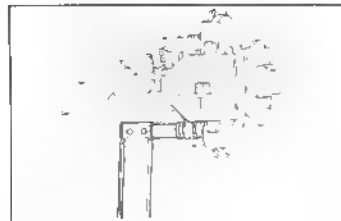
Remove the bolt from the torque plate and lower the cylinder

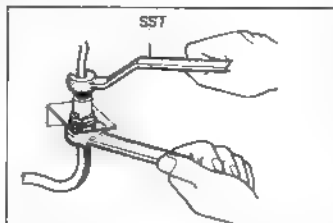
NOTE: Insert the cylinder carefully so the boot is not wedged.

13. INSTALL CYLINDER INSTALLATION BOLT

Install and torque the cylinder installation bolt.

Torque: 200 kg-cm (14 ft-lb)

14. FILL WITH BRAKE FLUID



REMOVAL OF CYLINDER

(See page BR-23)

1. DISCONNECT BRAKE HOSE FROM BRAKE TUBE AND CYLINDER

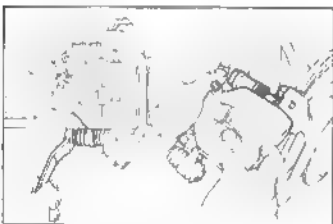
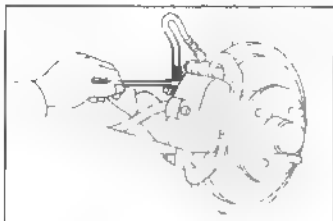
- (a) Using SST and a spanner, disconnect the brake tube from the hose

SST 09751 36011

- (b) Use a container to catch the brake fluid.

- (c) Remove the clip from the brake hose.

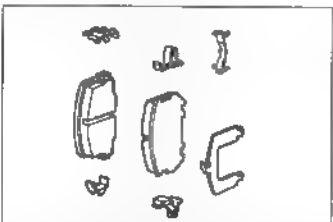
- (d) Disconnect the brake hose from the cylinder.



2. REMOVE CYLINDER

- (a) Remove the cylinder installation bolt.

- (b) Lift up and push out the cylinder from the torque plate pin.



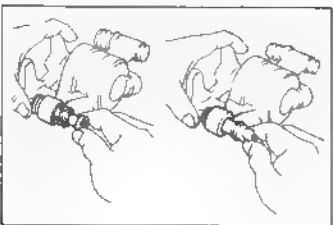
3. REMOVE FOLLOWING PARTS:

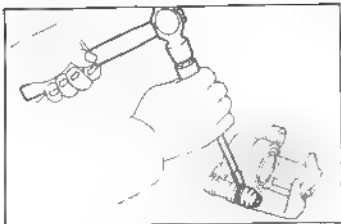
- (a) Anti-squeal shim
(b) Brake pads
(c) Anti-rattle springs
(d) Pad guide plate
(e) Pad support plate

DISASSEMBLY OF CYLINDER

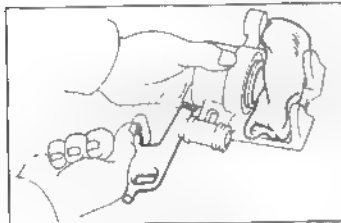
(See page BR-23)

1. REMOVE SLIDING BUSHING AND BOOT





2. REMOVE MAIN PIN BOOT WITH A CHISEL

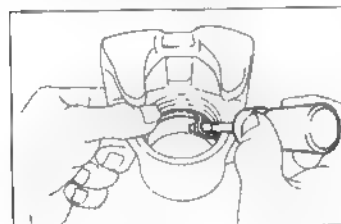


3. REMOVE CYLINDER BOOT AND SET RING FROM CYLINDER

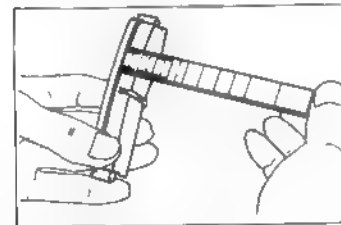
4. REMOVE PISTON FROM CYLINDER

- (a) Put a piece of cloth or such between the piston and cylinder.
- (b) Use compressed air to remove the piston from the cylinder

WARNING: Do not place your fingers in front of the piston when using compressed air.



5. REMOVE PISTON SEAL FROM CYLINDER

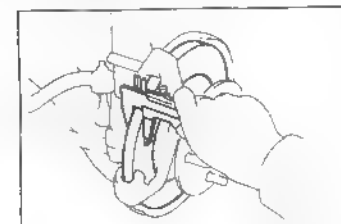


INSPECTION OF FRONT BRAKE COMPONENTS

1. MEASURE PAD LINING THICKNESS

Minimum thickness: 1.0 mm (0.039 in.)

Replace the pad if the thickness is less than the minimum (the 1.0 mm slit is no longer visible) or if it shows sign of uneven wear



2. MEASURE ROTOR DISC THICKNESS

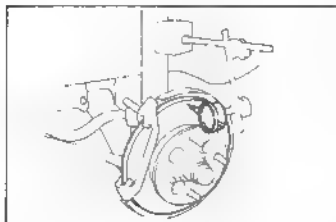
Standard thickness:

w/4A-GE and Switzerland 4A-C	18.0 mm (0.709 in.)
Others	12.5 mm (0.492 in.)

Minimum thickness:

w/4A-GE and Switzerland 4A-C	17.0 mm (0.669 in.)
Others	11.5 mm (0.453 in.)

If the disc thickness is less than minimum, replace the disc.



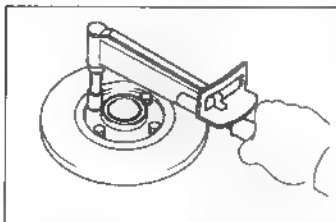
3. MEASURE ROTOR DISC RUNOUT

Measure the rotor disc runout at 10 mm (0.39 in.) from the outer edge of the rotor disc.

Maximum disc runout: 0.15 mm (0.0059 in.)

If the runout is greater than the maximum, replace the disc.

NOTE: Make sure the front bearing is adjusted correctly



4. IF NECESSARY, REPLACE ROTOR DISC

(a) Remove the torque plate from the dust cover

(b) Remove the axle hub. (See page FA-6)

(c) Remove the disc from the axle hub.

(d) Install a new rotor disc. Torque the four bolts.

Torque: 650 kg-cm (47 ft-lb)

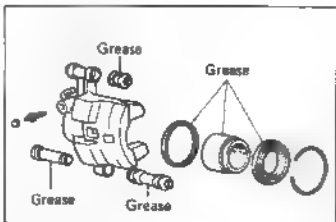
(e) Install the axle hub and adjust the front bearing preload (See page FA-8, 9)

(f) Install the torque plate onto the dust cover

Torque: 650 kg-cm (47 ft-lb)

ASSEMBLY OF CYLINDER

(See page BR-23)



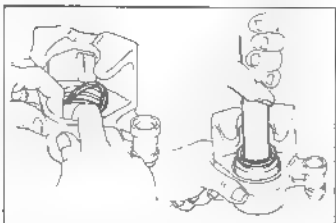
1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO FOLLOWING PARTS

(a) Main pin boot

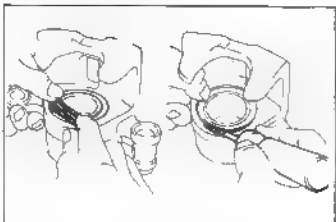
(b) Sliding pin and boot

(c) Piston seal and piston

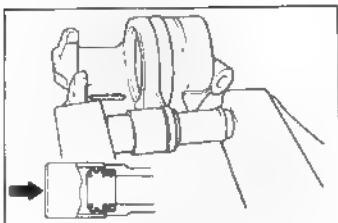
(d) Cylinder boot



2. INSTALL PISTON SEAL AND PISTON IN CYLINDER

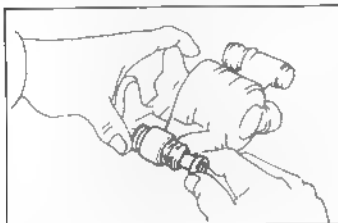


3. INSTALL CYLINDER BOOT AND SET RING IN CYLINDER



4. INSTALL NEW MAIN PIN BOOT

Using a 22-mm socket wrench, press in the new boot.



5. INSTALL DUST BOOT AND SLIDING BUSHING

(a) Install the dust boot.

NOTE: Be careful that the seal does not fold under.

(b) Install the bushing into the boot, facing the flange toward the inside.

SEE
FRONT BRAKE
REPLACEMENT OF BRAKE PADS
BR-23

INSTALLATION OF CYLINDER

(See page BR-23)

1. INSTALL FOLLOWING PARTS:

- (a) Pad support plate
- (b) Pad guide plate
- (c) Anti rattle springs
- (d) Brake pads
- (e) Anti squeal shim

2. INSTALL CYLINDER

(a) Install the cylinder onto the main pin

NOTE: Make sure that the boot end is installed into the groove of the main pin

(b) Install the cylinder over the brake pads.

3. INSTALL CYLINDER INSTALLATION BOLT

Install the cylinder installation bolt and torque the bolt

Torque: 200 kg-cm (14 ft-lb)

NOTE: Insert the installation bolt into the cylinder carefully so as not to wedge the boot

4. CONNECT BRAKE LINE

(a) Connect the brake hose to the cylinder

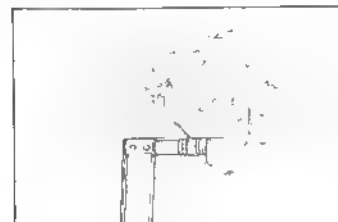
Torque: 235 kg-cm (17 ft-lb)

(b) Using SST, connect brake hose to the brake tube.

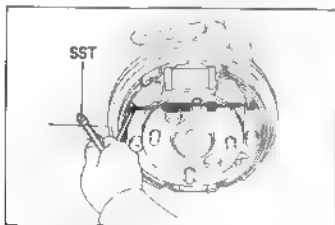
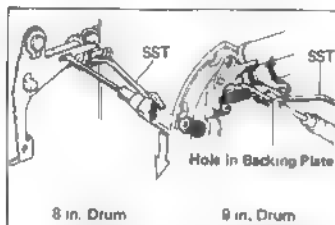
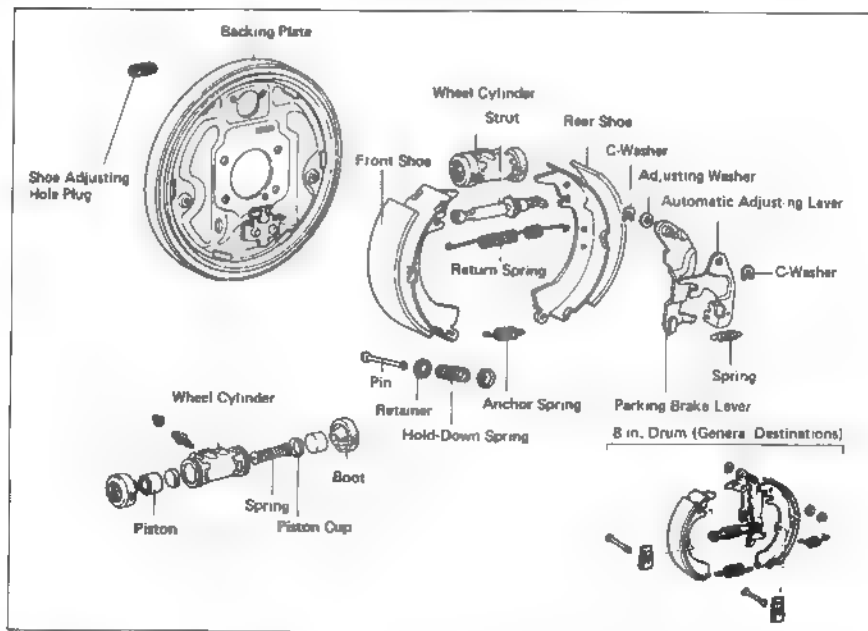
SST 09751-36011

Torque: 155 kg-cm (11 ft-lb)

5. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)



REAR BRAKE (Drum Type) COMPONENTS



REMOVAL OF REAR BRAKE

1. REMOVE REAR WHEEL AND BRAKE DRUM

NOTE If the brake drum is difficult to remove, perform the following:

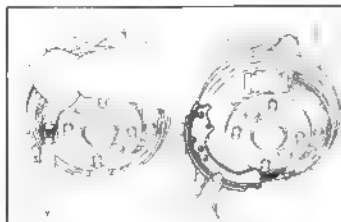
- Insert a screwdriver through the hole in the backing plate, and hold the automatic adjusting lever away from the adjusting bolt.
- Using SST or another screwdriver, reduce the brake shoe tension by turning the adjusting bolt.

SST 09704 10010

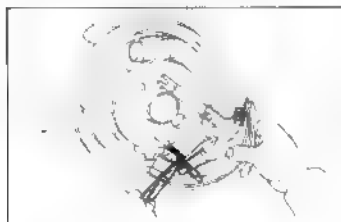
2. REMOVE FRONT SHOE

- Using SST, remove the return spring.

SST 09703 30010

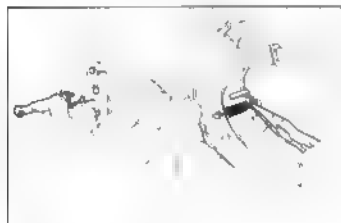


- (b) Remove the hold-down spring and pin
- (c) Remove the front shoe and the anchor spring



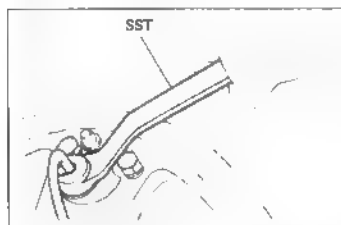
3. REMOVE REAR SHOE

- (a) Remove the hold-down spring and pin
- (b) Remove the rear shoe with strut.
- (c) Disconnect the parking brake cable from the lever



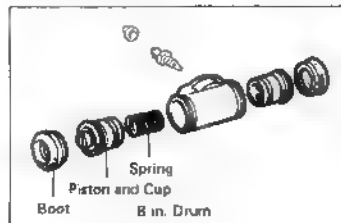
4. REMOVE STRUT FROM REAR SHOE

- (a) Remove the adjusting lever spring.
- (b) Remove the strut.



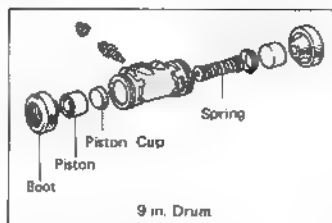
5. IF NECESSARY, REMOVE AND DISASSEMBLE WHEEL CYLINDER

- (a) Using SST, disconnect the brake tube
SST 09751 36011
- (b) Remove the two bolts and the wheel cylinder



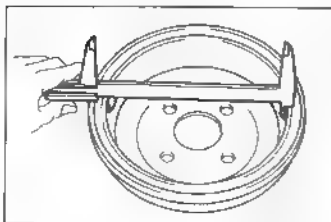
6. DISASSEMBLE WHEEL CYLINDER

- (a) Use a container to catch the fluid
- (b) Remove the following parts from the wheel cylinder (8 in. Drum)
 - Two boots
 - Two pistons and cups
 - Spring



(9 in. Drum)

- Two boots
- Two pistons
- Two piston cups
- Spring



INSPECTION OF REAR BRAKE COMPONENTS

1. MEASURE BRAKE DRUM INSIDE DIAMETER

Standard inside diameter:

8 in. Drum 200.0 mm (7.874 in.)

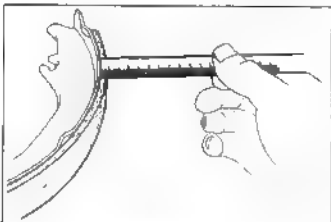
9 in. Drum 228.6 mm (9.000 in.)

Maximum inside diameter:

8 in. Drum 202.0 mm (7.953 in.)

9 in. Drum 230.6 mm (9.079 in.)

If the drum is scored or worn, the brake drum may be lathed to the maximum inside diameter



2. MEASURE BRAKE SHOE LINING THICKNESS

Standard thickness:

8 in. Drum 4.0 mm (0.157 in.)

9 in. Drum 5.0 mm (0.197 in.)

Minimum thickness: 1.0 mm (0.039 in.)

If the shoe lining is less than minimum or shows signs of uneven wear, replace the brake shoes.

NOTE: In order to maintain effective brakes, replace all of the brake shoes if the thickness of any one is not within specification.

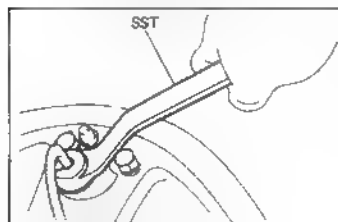
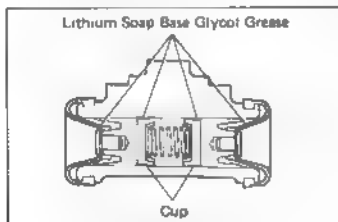
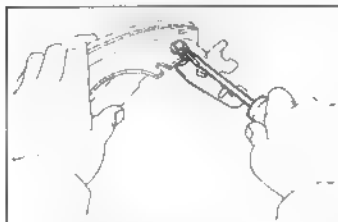
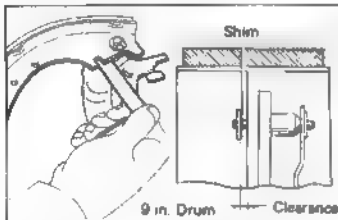
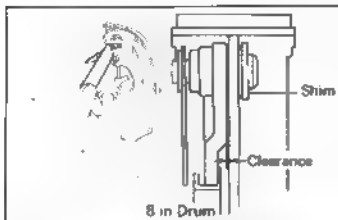


3. INSPECT BRAKE LINING AND DRUM FOR PROPER CONTACT

Replace the brake shoe or lath the brake drum as necessary

4. INSPECT WHEEL CYLINDER FOR CORROSION OR DAMAGE

5. INSPECT BACKING PLATE FOR WEAR OR DAMAGE



6. MEASURE CLEARANCE BETWEEN BRAKE SHOE AND LEVER

Using a feeler gauge, measure the clearance.

Standard clearance: 0 – 0.35 mm (0 – 0.0138 in.)

If the clearance is not within specification, replace the shim with one of the correct size.

Shim thickness		mm (in.)	
Thickness		Thickness	
0.2	(0.008)	0.5	(0.020)
0.3	(0.012)	0.6	(0.024)
0.4	(0.016)	0.9	(0.035)

7. IF NECESSARY, CHANGE SHIM

- Remove the C-washer from the rear shoe.
- Install the correct size shim.
- Install the parking brake lever with a new C-washer.

ASSEMBLY OF REAR BRAKE

(See page BR-29)

1. ASSEMBLE WHEEL CYLINDER

- Apply lithium soap base glycol grease to the piston cups.
- Install the spring and two piston cups in the wheel cylinder.

CAUTION: Make sure the flanges of the cups are pointed inward.

- Apply lithium soap base glycol grease to the inside of the boots.
- Install the two boots to the pistons and install them into the cylinder.

2. INSTALL WHEEL CYLINDER ON BACKING PLATE

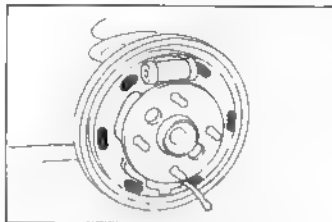
- Install the wheel cylinder on the backing plate with two bolts. Torque the bolts.

Torque: 100 kg-cm (7 ft-lb)

- Using SST, connect the brake tube.

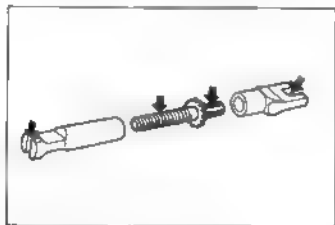
SST 09751-36011

Torque: 155 kg-cm (11 ft-lb)

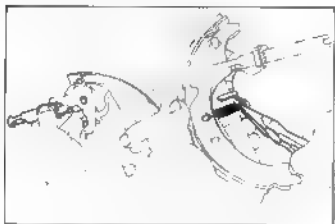


3. APPLY HIGH-TEMPERATURE TYPE GREASE TO FOLLOWING PARTS:

- (a) Backing plate and brake shoe contact points
- (b) Anchor plate and brake shoe contact points



- (c) Strut and adjusting bolt contact points
- (d) Strut and brake shoe contact points



4. INSTALL STRUT ONTO REAR SHOE

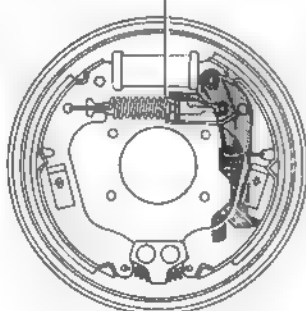
- (a) Install the strut.
- (b) Install the adjusting lever spring.
(8 in. Drum)
- (c) Install the return spring to the strut.

8 in. Drum

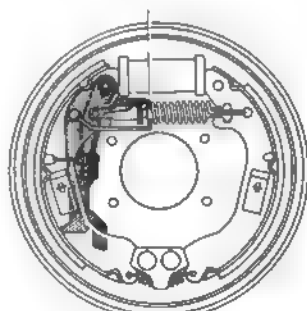
Left-hand Threads

Right-hand Threads

Front ←



Left Wheel



→ Front

Right Wheel

9 in Drum

Right-hand Threads

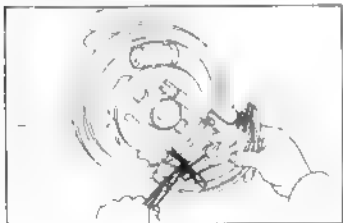
Left-hand Threads

Front ←

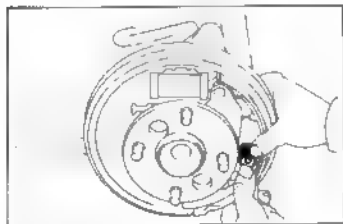
→ Front

Left Wheel

Right Wheel

**5. INSTALL REAR SHOE**

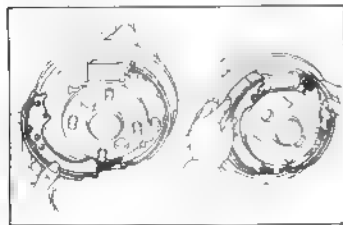
- (a) Connect the parking brake cable to the lever.



- (b) Set the rear shoe in place with the end of the shoe inserted in the wheel cylinder and the other end in the anchor plate.

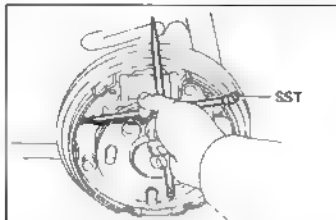
- (c) Install the pin and the shoe hold-down spring.

CAUTION: Do not allow oil or grease to get on the rubbing face.

**6. INSTALL FRONT SHOE**

- (a) Install the anchor spring between the front and rear shoes.

- (b) Set the front shoe in place with the end of the shoe inserted in the wheel cylinder and the strut.

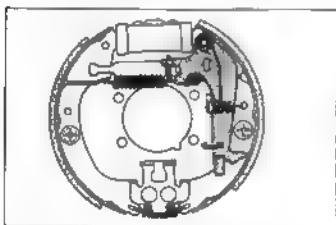


(c) Install the shoe hold-down spring and pin.

(d) Using SST, install the return spring.

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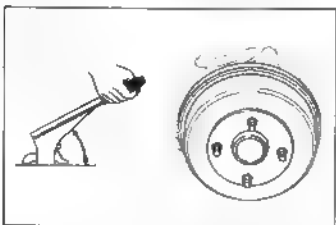
CAUTION. Do not apply oil, grease or such to the shoe surfaces.



7. CHECK OPERATION OF AUTOMATIC ADJUSTER MECHANISM

(a) Check that the adjusting bolt turns when the parking brake lever is pulled

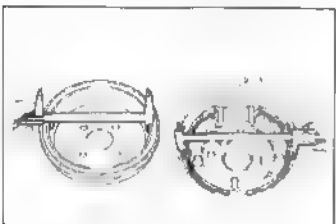
If the bolt does not turn, check for incorrect installation of the rear brakes.



(b) Adjust the strut to the shortest possible length

(c) Install the drum

(d) Pull the parking brake lever all the way up several times.



8. CHECK CLEARANCE BETWEEN BRAKE SHOES AND DRUM

(a) Remove the drum

(b) Measure the brake drum inside diameter and the diameter of the brake shoes. Check that the difference between the diameters equals the correct shoe clearance.

Shoe clearance: 0.6 mm (0.024 in.)

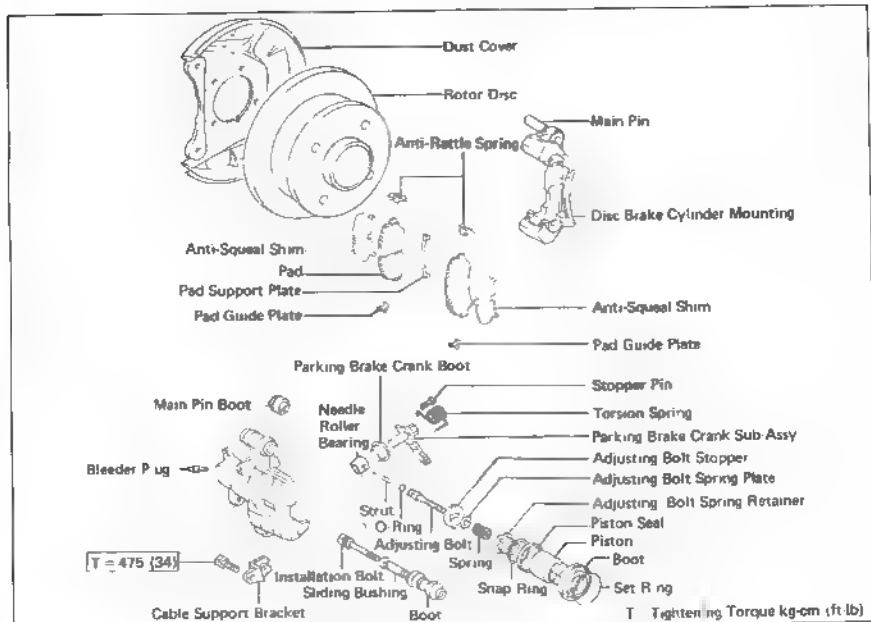
If incorrect, check the parking brake system.

9. INSTALL BRAKE DRUM AND REAR WHEEL

10. FILL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)

11. CHECK FOR FLUID LEAKAGE

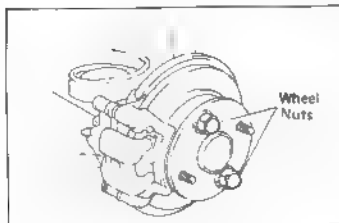
REAR BRAKE (Disc Type) COMPONENTS



REPLACEMENT OF BRAKE PADS

1. REMOVE REAR WHEEL

Remove the wheel and temporarily fasten the rotor disc with the wheel nuts.

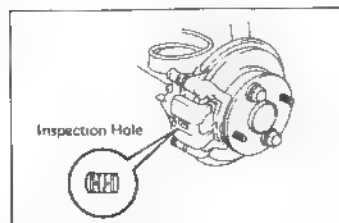


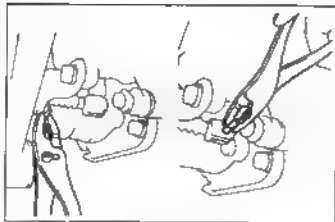
2. INSPECT PAD LINING THICKNESS

Check the pad thickness through the cylinder inspection hole and replace the pads if not within specification.

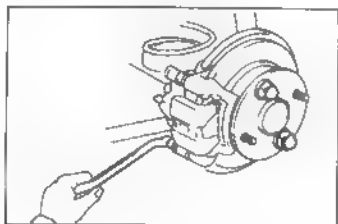
Standard thickness: 9.5 mm (0.374 in.)

Minimum thickness: 1.0 mm (0.039 in.)

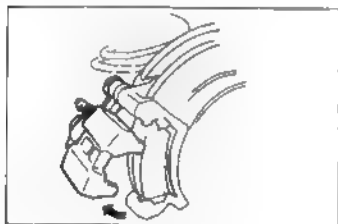




3. **DRAW OUT A SMALL AMOUNT OF BRAKE FLUID**
4. **DISCONNECT PARKING BRAKE CABLE**
 - (a) Using pliers, remove the clip, cotter pin and hole pin
 - (b) Pull out the cable from the parking brake cable bracket.



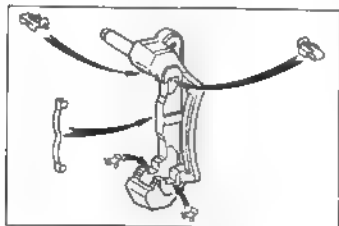
5. **REMOVE CYLINDER INSTALLATION BOLT**

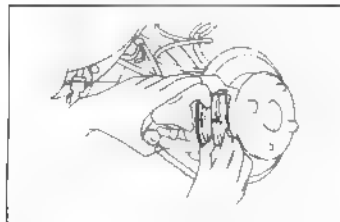


6. **LIFT UP CYLINDER**
NOTE: Do not remove the cylinder from the main pin.



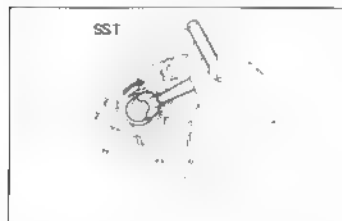
7. **REMOVE FOLLOWING PARTS:**
 - (a) Brake pads
 - (b) Anti-squeal shims
 - (c) Anti-rattle springs
 - (d) Pad support plate
 - (e) Pad guide plates
8. **CHECK ROTOR DISC THICKNESS**
(See step 2 on page BR-41)
9. **CHECK ROTOR DISC RUNOUT**
(See step 3 on page BR-41)
10. **INSTALL NEW PAD SUPPORT PLATE, ANTI-RATTLE SPRINGS AND PAD GUIDE PLATES**



**11. INSTALL NEW PADS AND NEW ANTI-SQUEAL SHIMS**

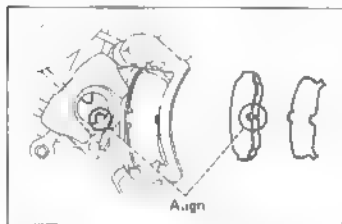
- (a) Install the anti-squeal shims to the pads.
- (b) Raise the cylinder, and install the pads to the cylinder mounting.

CAUTION: Do not allow oil or grease to get on the rubbing face.

**12. LOWER CYLINDER**

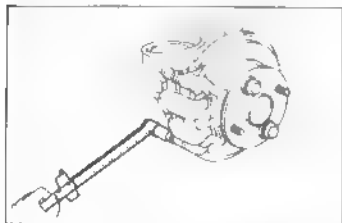
- (a) Using SST, slowly turn the piston clockwise while pushing it in to where it locks.

SST 09710-14020



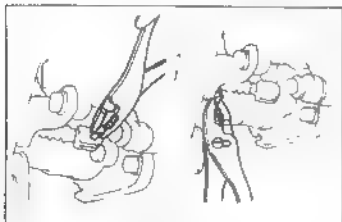
- (b) Fit the pad protrusion into the piston stopper groove, and install the cylinder.

NOTE: Insert the cylinder carefully so the boot is not wedged

**13. INSTALL CYLINDER INSTALLATION BOLT**

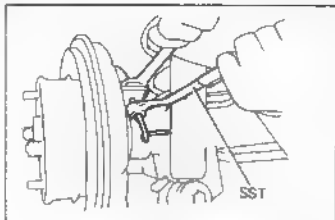
Install and torque the cylinder installation bolt.

Torque: 200 kg-cm (14 ft-lb)

**14. CONNECT PARKING BRAKE CABLE**

Using pliers, install the hole pin, cotter pin and clip to the parking brake cable bracket

15. ADJUST PARKING BRAKE AUTOMATIC ADJUSTER BY FULLY PULLING AND RELEASING PARKING BRAKE LEVER**16. INSTALL REAR WHEEL****17. CHECK THAT FLUID LEVEL IS AT "MAX" LINE**

**REMOVAL OF CYLINDER**

(See page BR-36)

1. **DISCONNECT BRAKE HOSE FROM BRAKE TUBE**
 - (a) Using SST and a spanner, disconnect the brake tube from the hose.
 - SST 09751 36011
 - (b) Use a container to catch the brake fluid.
2. **DISCONNECT BRAKE HOSE FROM CYLINDER**
3. **REMOVE PADS** (See step 4 to 7 on page BR-37)
4. **REMOVE CYLINDER**
 - (a) Remove the main pin boot (mounting side)
 - (b) Lift up and push out the cylinder from the main pin.

**DISASSEMBLY OF CYLINDER**

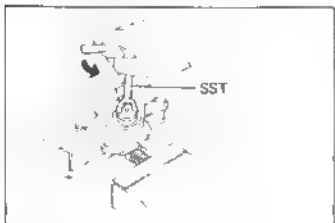
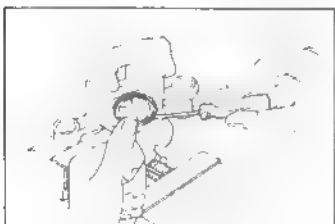
(See page BR 36)

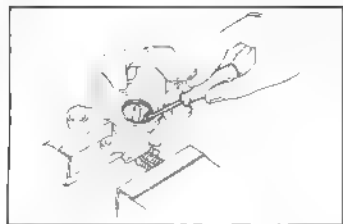
1. **REMOVE SLIDING BUSHING AND BOOT**
2. **REMOVE CYLINDER BOOT SET RING AND CYLINDER BOOT**

Using a screwdriver, remove the cylinder boot set ring and cylinder boot
3. **REMOVE PISTON FROM CYLINDER**

Using SST, turn the piston counter clockwise and remove it

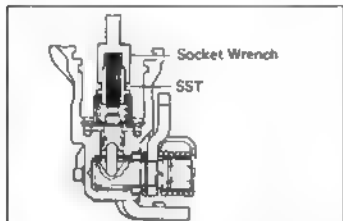
SST 09719 14020





4. REMOVE PISTON SEAL FROM CYLINDER

Using a screwdriver, remove the piston seal.



5. REMOVE SNAP RING FROM CYLINDER

- (a) Set SST onto the adjusting nut, and lightly tighten it with a 14-mm socket.

SST 09756-00010

CAUTION:

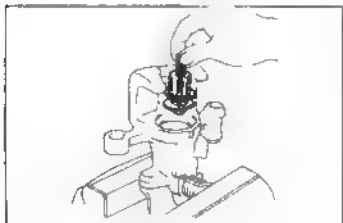
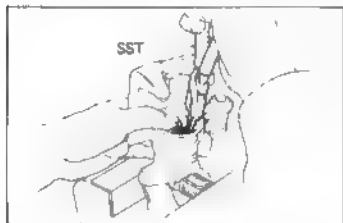
- To insure safety, always use SST as there is a possibility of the spring flying out, causing injury or damage to the interior surface of the cylinder
- Be careful not to tighten the SST too tight as might damage the spring retainer.

- (b) Using SST or snap ring pliers, remove the snap ring from the cylinder

SST 09905-00013

- (c) Remove the SST.

SST 09756-00010



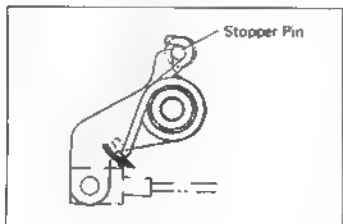
6. REMOVE ADJUSTING BOLT

From the cylinder, pull out the spring retainer, spring, spring plate and stopper together with the adjusting bolt.

CAUTION:

- Be careful not to pry too hard.
- Be careful not to damage the O-ring.

7. REMOVE STRUT

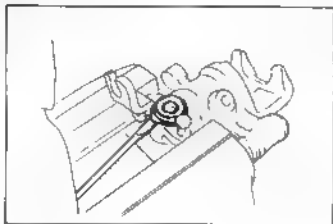


8. REMOVE TORSION SPRING FROM PARKING BRAKE CRANK

9. REMOVE PARKING BRAKE CRANK FROM CYLINDER

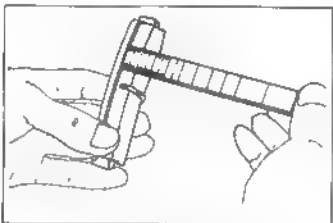
Turn the crank to where it will not catch on the stopper pin, and pull it out from the cylinder

NOTE: Do not attempt to disassemble the crank from the sub assembly state. Even if the nut is removed, the lever is pressure-fitted to the pin so it cannot be disassembled.

**10. REMOVE PARKING BRAKE CRANK BOOT**

Using a screwdriver, lightly tap on the metal portion of the boot to remove it.

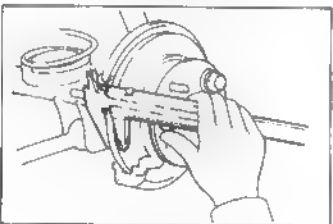
NOTE: Do not remove the boot unless replacing it.

**INSPECTION OF REAR BRAKE COMPONENTS****1. MEASURE PAD LINING THICKNESS**

Standard thickness: 9.5 mm (0.374 in.)

Minimum thickness: 1.0 mm (0.039 in.)

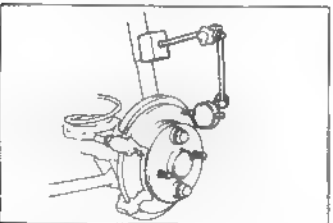
Replace the pad if the thickness is less than the minimum (the 1.0 mm slot is no longer visible) or if it shows sign of uneven wear.

**2. MEASURE ROTOR DISC THICKNESS**

Standard thickness: 10.0 mm (0.394 in.)

Minimum thickness: 9.0 mm (0.354 in.)

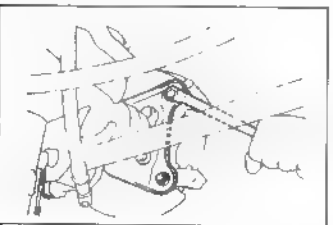
If the disc is scored or worn, or if thickness is less than minimum, repair or replace the disc.

**3. MEASURE ROTOR DISC RUNOUT**

Measure the rotor disc runout at 10 mm (0.39 in.) from the outer edge of the rotor disc.

Maximum disc runout: 0.15 mm (0.0059 in.)

If the runout is greater than the maximum, replace the disc.

**4. IF NECESSARY, REPLACE ROTOR DISC**

(a) Remove the disc brake cylinder mounting from the dust cover.

(b) Remove the hub nuts and rotor disc.

(c) Install a new rotor disc and temporarily fasten the disc with wheel nuts.

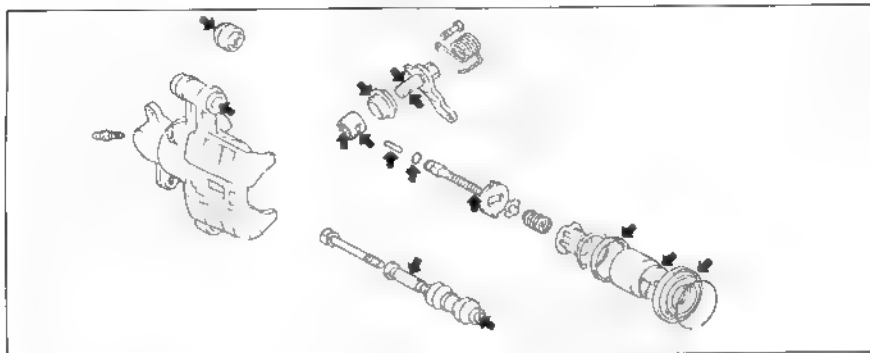
(d) Install the disc brake cylinder mounting to the dust cover.

Torque: 475 kg-cm (34 ft-lb)

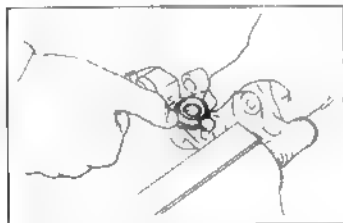
ASSEMBLY OF CYLINDER

(See page BR-36)

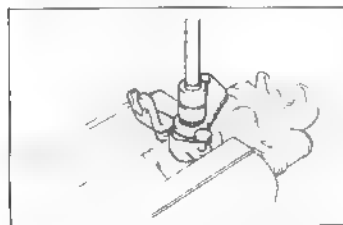
1. APPLY LITHIUM SOAP BASE GLYCOL GREASE TO PARTS INDICATED BY ARROWS



2. INSTALL PARKING BRAKE CRANK BOOT IN CYLINDER



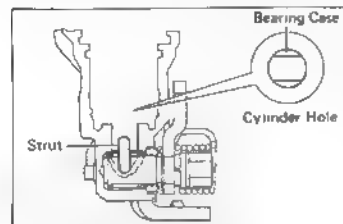
3. INSTALL PARKING BRAKE CRANK IN CYLINDER
CAUTION: Securely match the crank boot with the groove of the crank seal

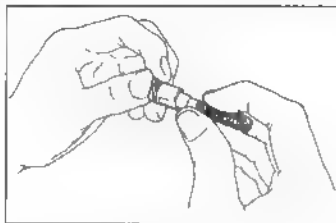
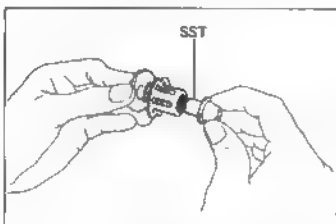


4. INSTALL TORSION SPRING

5. INSTALL STRUT

Before installing the strut, adjust the rollers of the needle roller bearing so they do not catch on the cylinder hole.



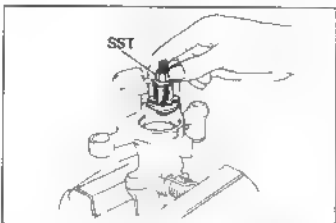
**6. INSTALL A NEW O-RING TO ADJUSTING BOLT****7. ASSEMBLE ADJUSTING BOLT**

- (a) Assemble the stopper, washer, spring and spring case to the adjusting bolt and, using SST, fully tighten them down by hand

SST 09766-00010

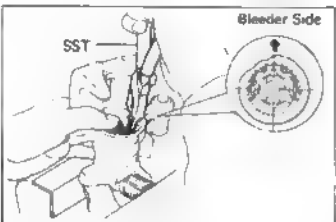
CAUTION:

- Position the inscribed surface of the stopper upward.
- Align the notches of the spring case with the notches of the stopper.



- (b) Install the adjusting bolt sub-assy in the cylinder

7

**8. INSTALL SNAP RING**

- (a) Using SST or snap ring pliers, install the snap ring

SST 09905-00013

NOTE. Face the snap ring opening toward the bleeder side.

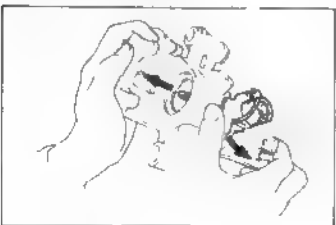
- (b) Remove the SST

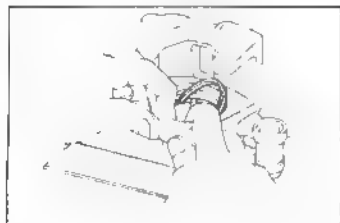
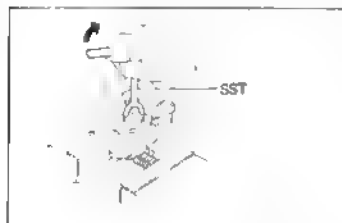
SST 09756-00010

- (c) Pull up strongly on the adjusting bolt by hand and insure that it does not move.

9. PERFORM OPERATIONAL CHECK

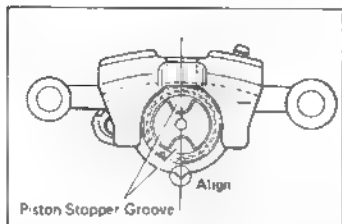
After performing steps 1 to 8, move the parking brake crank by hand and insure that the adjusting bolt moves smoothly.



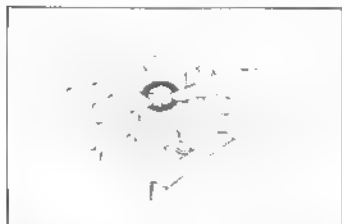
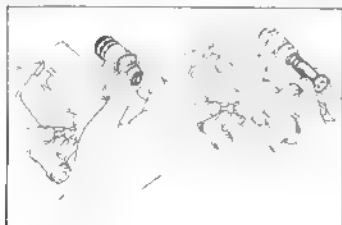
**10. INSTALL PISTON SEAL IN CYLINDER****11. ASSEMBLE PISTON IN CYLINDER**

- (a) Using SST, slowly screw in the piston clockwise to where it will not descend any further

SST 09719-14020



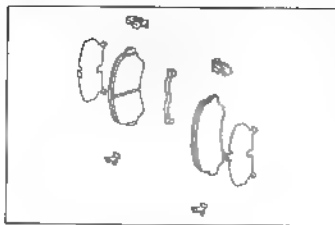
- (b) Align the center of the piston stopper groove with the positioning protrusion of the cylinder

**12. INSTALL CYLINDER BOOT AND SET RING IN CYLINDER****13. INSTALL DUST BOOT AND SLIDING BUSHING**

- (a) Install the dust boot

NOTE. Be careful that the seal does not fold under.

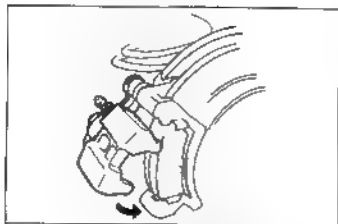
- (b) Install the bushing into the boot, facing the flange toward the inside.

**INSTALLATION OF CYLINDER**

(See page BR-38)

1. INSTALL FOLLOWING PARTS.

- (a) Pad guide plates
- (b) Pad support plate
- (c) Anti-rattle springs
- (d) Brake pads
- (e) Anti-squeal shims

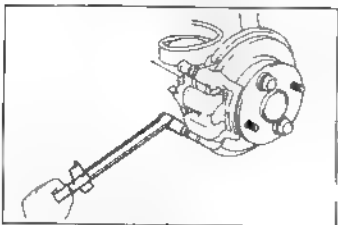
**2. INSTALL CYLINDER**

- (a) Install the cylinder onto the main pin.

NOTE: Make sure that the boot end is installed into the groove of the main pin.

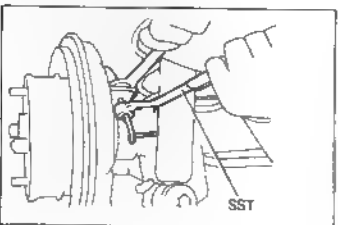
- (b) Install the cylinder so the piston stopper groove fits with the pad protrusion. ←

NOTE: Work carefully so as not to wedge the boot.

**3. INSTALL CYLINDER INSTALLATION BOLT**

Install the cylinder installation bolt and torque the bolt.

Torque: 200 kg-cm (14 ft-lb)

**4. CONNECT PARKING BRAKE CABLE**
(See step 14 on page BR-38)**5. CONNECT BRAKE HOSE**

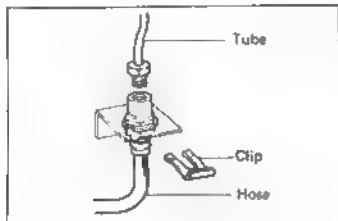
- (a) Connect the brake hose to the cylinder

Torque: 235 kg-cm (17 ft-lb)

- (b) Using SST, connect the brake hose to the brake tube.
SST 09751 36011

Torque: 155 kg-cm (11 ft-lb)

6. FULL BRAKE RESERVOIR WITH BRAKE FLUID AND BLEED BRAKE SYSTEM (See page BR-7)**7. CHECK FOR FLUID LEAKAGE**



BRAKE HOSES AND TUBES

DISCONNECT AND CONNECT HOSE AND TUBE

1. DISCONNECT HOSE AND TUBE

- Disconnect the clip.
- Using a wrench to hold the hose and SST to hold the tube, disconnect the tube and hose.

SST 09751-36011

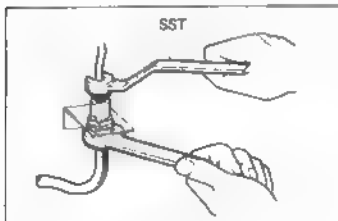
2. CONNECT HOSE AND TUBE

- Connect the hose and tube by hand.
- Using a wrench to hold the hose and SST to hold the tube, torque the connection.

SST 09751-36011

Torque: 155 kg-cm (11 ft-lb)

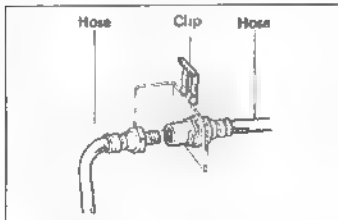
- Install a new hose clip.



DISCONNECT AND CONNECT TWO HOSES

1. DISCONNECT TWO HOSES

- Remove the clip.
- Using two wrenches, disconnect the two hoses.



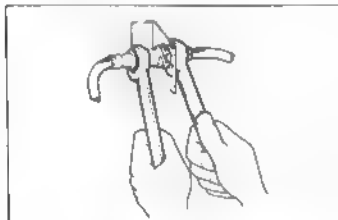
2. CONNECT TWO HOSES

- Connect the two hoses by hand.
- Using two wrenches, torque the connection.

Torque: 235 kg-cm (17 ft-lb)

NOTE All hoses must be free from excessive bending twisting and pulling.

- Install a new hose clip.



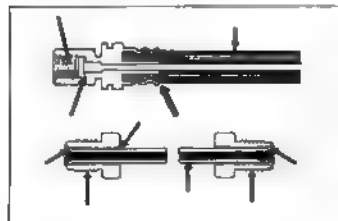
INSPECTION OF BRAKE HOSES AND TUBES

1. INSPECT BRAKE HOSES

- Inspect the hose for damage, cracks or swelling.
- Inspect the threads for damage.

2. INSPECT BRAKE TUBES

- Inspect the tube for damage, cracks, dents or corrosion.
- Inspect the threads for damage.



STEERING

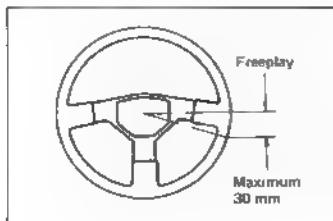
	Page
PRECAUTIONS	SR-2
TROUBLESHOOTING	SR-2
ON-VEHICLE INSPECTION	SR-3
STEERING MAIN SHAFT WITH TILT STEERING	SR-3
STEERING GEAR HOUSING	SR-11
POWER STEERING	SR-21
On-Vehicle Inspection	SR-21
Bleeding of Power Steering System	SR-23
Oil Pressure Check	SR-23
Vane Pump	SR-25
Gear Housing	SR-33

PRECAUTIONS

Care must be taken to replace each part properly because it could affect the performance of the steering system and result in a driving hazard.

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
Hard steering	Tires improperly inflated	Inflate tires to proper pressure	
	Insufficient lubricant	Lubricate suspension and steering linkage	
	Excessive caster	Check front end alignment	FA-3
	Steering system joint worn	Replace steering system joint	SR 11, 33
	Lower arm ball joints worn	Replace lower arm ball joints	FA 14
	Steering column binding	Inspect steering column	SR 3
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR 11, 33
	Power steering belt loose	Adjust belt	SR 21
	Fluid level in reservoir low	Check reservoir	SR 21
	Power steering unit faulty	Check power steering unit	SR 21
Poor return	Tires improperly inflated	Inflate tires to proper pressure	
	Insufficient lubricant	Lubricate suspension and steering linkage	
	Wheel alignment incorrect	Check front end alignment	FA-3
	Steering column binding	Inspect steering column	SR 3
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR 11, 33
Excessive play	Front wheel bearing worn	Replace front wheel bearing	FA-8
	Main shaft yoke or intermediate shaft yoke worn	Replace main shaft or intermediate shaft	SR 3
	Lower arm ball joints worn	Replace lower arm ball joints	FA 14
	Steering system joints worn	Replace steering system joints	SR 11, 33
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR 11, 33
Abnormal noise	Steering linkage loose	Tighten steering linkage	
	Steering system joints worn	Replace steering system joints	SR 11, 33
	Steering gear out of adjustment or broken	Adjust or repair steering gear	SR 11, 33



ON-VEHICLE INSPECTION

1 CHECK THAT STEERING WHEEL FREEPLAY IS CORRECT

With the vehicle stopped and pointed straight ahead, rock the steering wheel gently back and forth with light finger pressure. Freeplay should not exceed the maximum limit.

Maximum play: 30 mm (1.18 in.)

If incorrect, repair. •

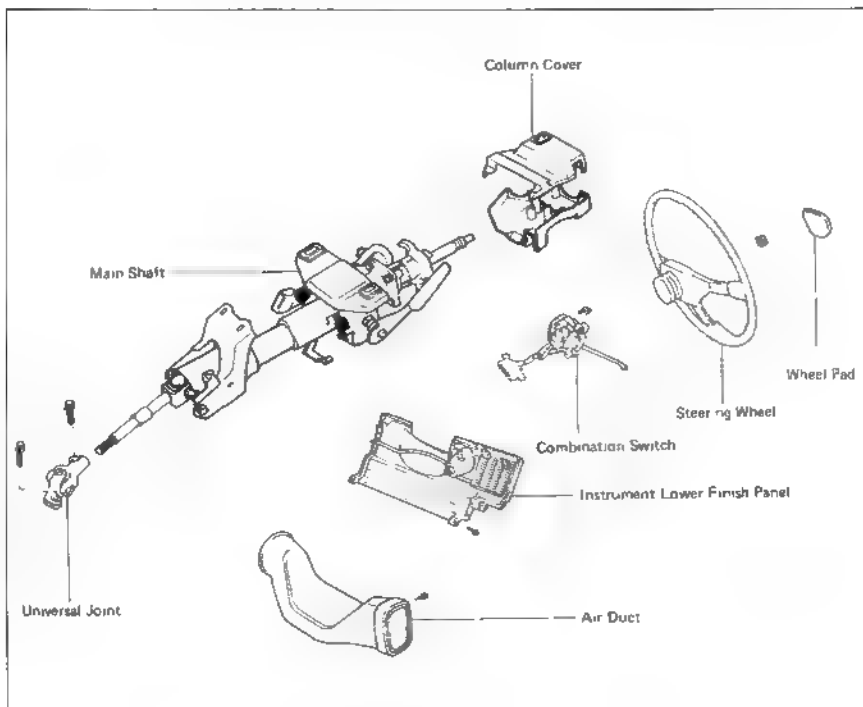
2. CHECK STEERING LINKAGE AND GEAR HOUSING

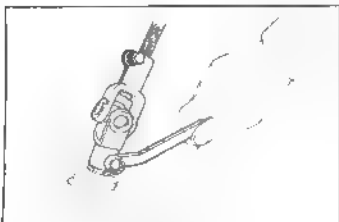
(a) Check the steering linkage for looseness or damage. Check that

- Tie rod ends do not have excessive play
- Boots are not damaged
- Boot clamps are not loose.

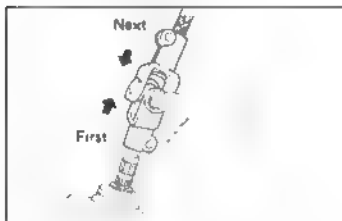
(b) Check gear housing for grease leakage or oozing.

STEERING MAIN SHAFT WITH TILT STEERING REMOVAL OF STEERING MAIN SHAFT

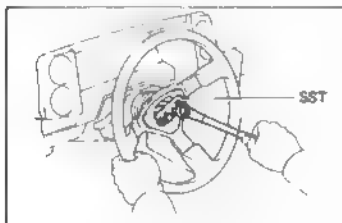


**1. REMOVE NEGATIVE CABLE FROM BATTERY****2. REMOVE UNIVERSAL JOINT**

(a) Remove the two set bolts.



(b) First pull the universal joint from the gear housing, and then pull it out from the main shaft.

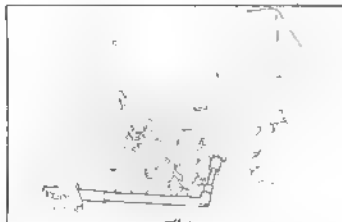
**3. REMOVE STEERING WHEEL**

(a) Remove the wheel pad

(b) Remove the steering wheel nut.

(c) Using SST, remove the steering wheel

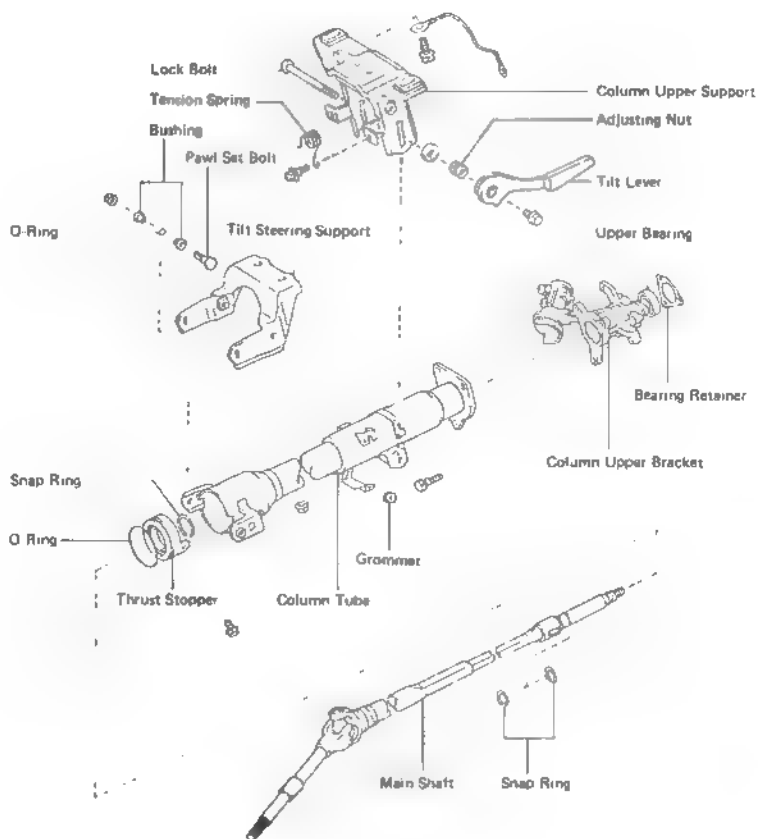
SST 09609-20011

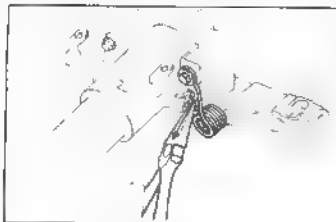
4. REMOVE INSTRUMENT LOWER FINISH PANEL, AIR DUCT AND COLUMN LOWER COVER**5. DISCONNECT IGNITION SWITCH CONNECTOR****6. REMOVE COMBINATION SWITCH WITH COLUMN UPPER COVER****7. LOOSEN HOLE COVER CLAMP BOLT****8. REMOVE MAIN SHAFT**

(a) Remove the support mounting nuts.

(b) Pull out the main shaft.

COMPONENTS

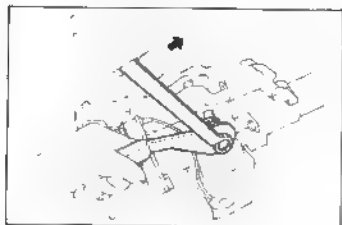




DISASSEMBLY OF STEERING MAIN SHAFT AND TILT MECHANISM

(See page SR-5)

1. REMOVE TENSION SPRINGS AND GROMMETS

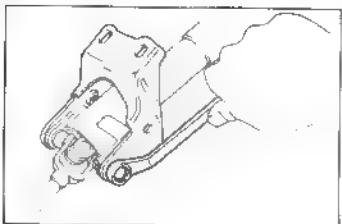


2. REMOVE COLUMN UPPER SUPPORT

- (a) Remove the set bolt and tilt lever.

NOTE The bolt has LH threads.

- (b) Remove the adjusting nut and washer.
(c) Pull out the lock bolt and remove the column upper support
(d) Remove the connector bracket



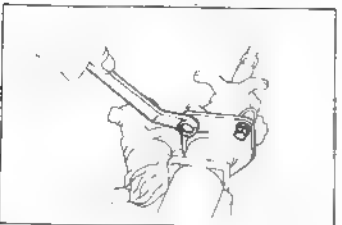
3. REMOVE TILT STEERING SUPPORT

- (a) Remove the two nuts and the pawl set bolts.
(b) Remove the bushings, O-rings and tilt steering support.

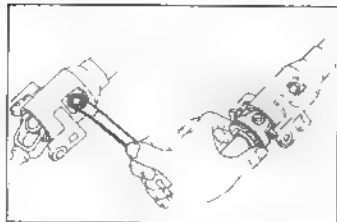


4. REMOVE UPPER BRACKET FROM MAIN SHAFT

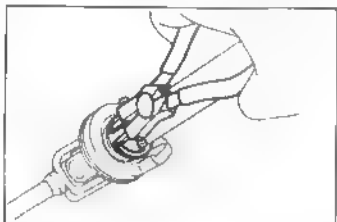
- (a) Remove the three screws and retainer from the upper bracket.
(b) Using snap ring pliers, remove the snap ring
(c) Release the steering lock.
(d) Remove the tapered-head bolt by tapping on it with a hammer and punch



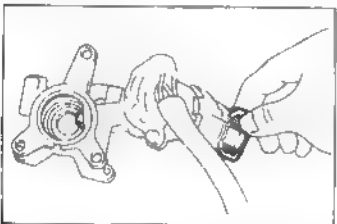
- (e) Remove the three bolts, and separate the upper bracket and column tube.

**5. REMOVE MAIN SHAFT FROM COLUMN TUBE**

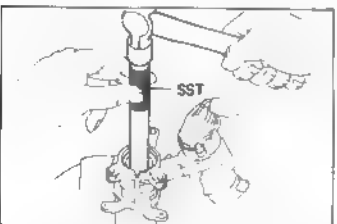
- (a) Remove the two bolts.
- (b) Pull out the main shaft from the column tube

**6. REMOVE THRUST STOPPER ASSEMBLY**

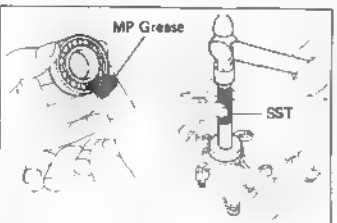
- (a) Using snap ring pliers, remove the snap ring.
- (b) Remove the thrust stopper assembly

**INSPECTION AND REPAIR OF STEERING MAIN SHAFT****1. INSPECT UPPER BRACKET**

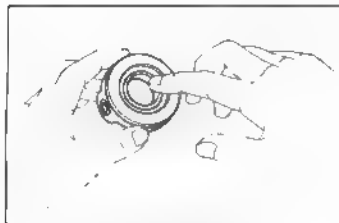
- (a) Check that the steering lock mechanism operates properly.
- (b) Check the upper bearing rotation condition and check for abnormal noise.

**2. IF NECESSARY, REPLACE UPPER BEARING**

- (a) Using SST, tap out the bearing
SST 09620-30010



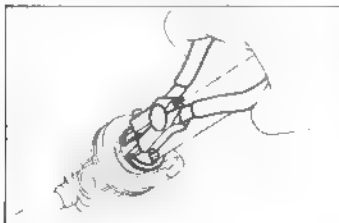
- (b) Pack a new bearing with MP grease
- (c) Using SST, tap in the new bearing.
SST 09620-30010



3. INSPECT LOWER BEARING

Check the bearing rotation condition and for abnormal noise.

If faulty, replace the thrust stopper assembly.

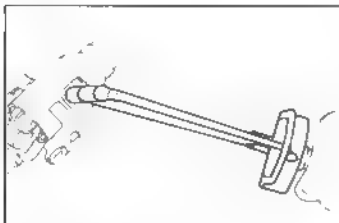


ASSEMBLY OF STEERING MAIN SHAFT AND TILT MECHANISM

(See page SR-5)

1. INSTALL THRUST STOPPER ASSEMBLY

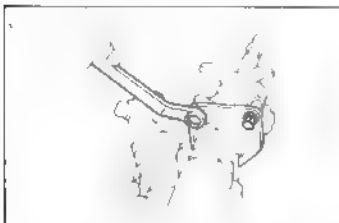
- Install the thrust stopper assembly.
- Using snap ring pliers, install the snap ring.



2. INSTALL MAIN SHAFT TO COLUMN TUBE

- Apply molybdenum disulphide lithium base grease to the thrust stopper.
- Install the main shaft and torque the bolts.

Torque: 130 kg-cm (9 ft-lb)

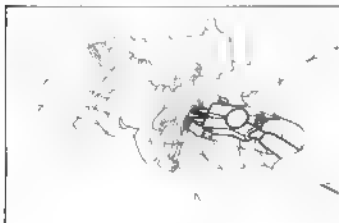


3. INSTALL UPPER BRACKET TO MAIN SHAFT

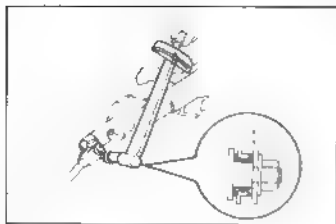
- Release the steering lock.
- Install the upper bracket.
- Torque the two bolts.

Torque: 195 kg-cm (14 ft-lb)

- Install the tapered head bolt and tighten it until the bolt head breaks off.



- Using snap ring pliers, install a new snap ring.
- Install the retainer to the upper bracket with the three screws.



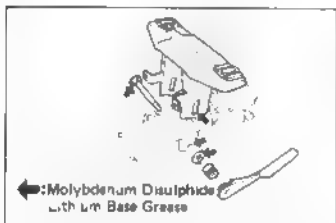
4. INSTALL TILT STEERING SUPPORT

- (a) Apply molybdenum disulphide lithium base grease to the bushings and O-rings, and install the two bushings to the column tube.
- (b) Install the tilt steering support and pawl set bolts with the bushings and O-rings.

NOTE: Be careful not to damage the bushings and O-ring.

- (c) Torque the nuts.

Torque: 120 kg-cm (9 ft-lb)

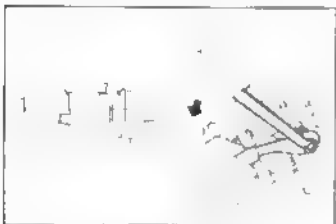


5. INSTALL COLUMN UPPER SUPPORT

- (a) Apply grease to the portions indicated by the arrows.
- (b) Install the column upper support and lock bolt.
- (c) Install the washer and torque the adjusting nut.

Torque: 95 kg-cm (82 in.-lb)

If there is any play in the support, tighten the adjusting nut to eliminate the play



- (d) Place the tilt lever in position and torque the set bolt.

Torque: 340 kg-cm (25 ft-lb)

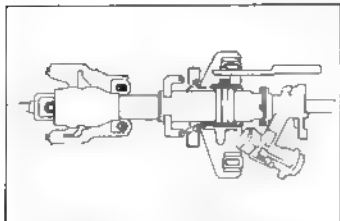
NOTE: The bolt has LH threads.

- (e) Install the connector bracket



6. INSTALL TENSION SPRINGS AND GROMMETS

7. CHECK TILT MECHANISM

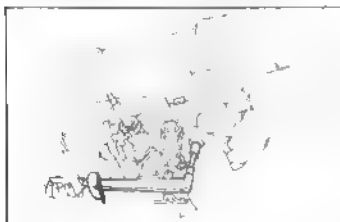


INSTALLATION OF STEERING MAIN SHAFT

(See page SR-3)

1. PLACE MAIN SHAFT IN INSTALLED POSITION

- (a) Place the main shaft in the hole cover.
- (b) Position the main shaft so the ends of lower support holes and mounting bolts touch.



2. TORQUE TILT STEERING SUPPORT NUTS AND COLUMN UPPER SUPPORT NUTS

- (a) Finger tighten the support mounting nuts.
- (b) Torque the tilt steering support nuts
Torque: 280 kg-cm (20 ft-lb)
- (c) Torque the column upper support nuts.
Torque: 290 kg-cm (21 ft-lb)

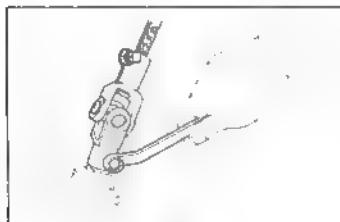
3. TORQUE HOLE COVER CLAMP BOLT

4. CONNECT IGNITION SWITCH CONNECTOR

5. INSTALL COMBINATION SWITCH WITH COLUMN UPPER COVER

6. INSTALL COLUMN LOWER COVER, AIR DUCT AND INSTRUMENT LOWER FINISH PANEL

7. INSTALL STEERING WHEEL



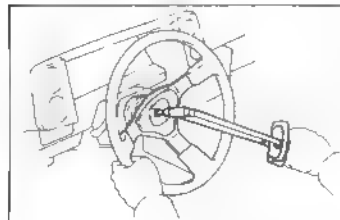
8. INSTALL UNIVERSAL JOINT

Install the universal joint and torque the two bolts.

Torque: 360 kg-cm (26 ft-lb)

9. CONNECT NEGATIVE CABLE TO BATTERY

10. CHECK STEERING WHEEL CENTER POINT

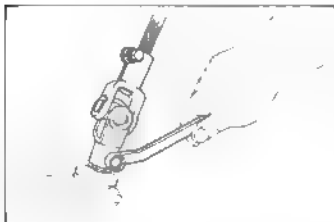
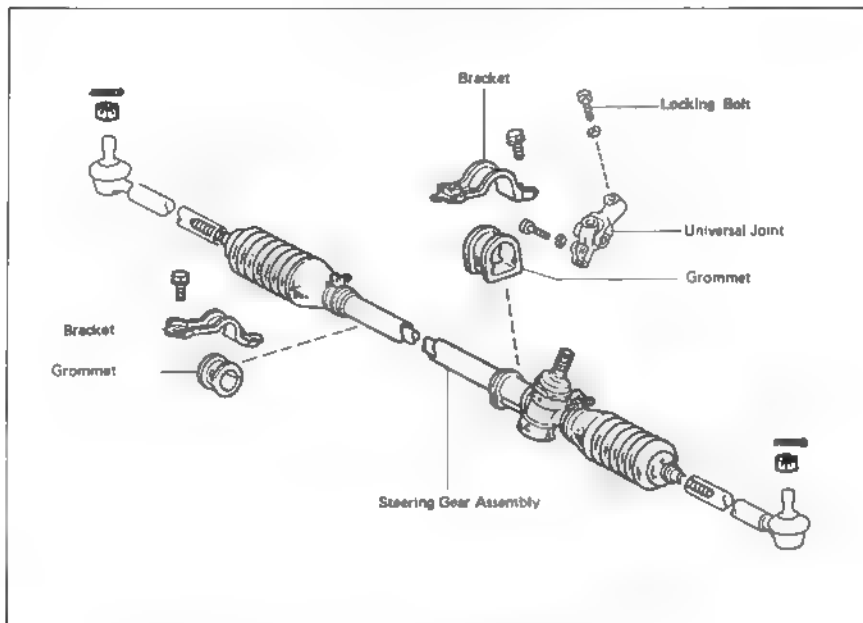


11. TORQUE STEERING WHEEL NUT

Torque the nut.

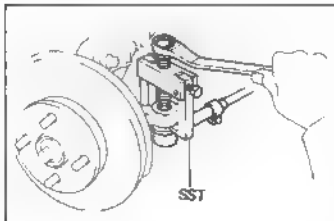
Torque: 350 kg-cm (25 ft-lb)

STEERING GEAR HOUSING REMOVAL OF GEAR HOUSING



1. REMOVE UNIVERSAL JOINT

- Remove the two set bolts.
- Remove the universal joint.



2. DISCONNECT TIE ROD ENDS

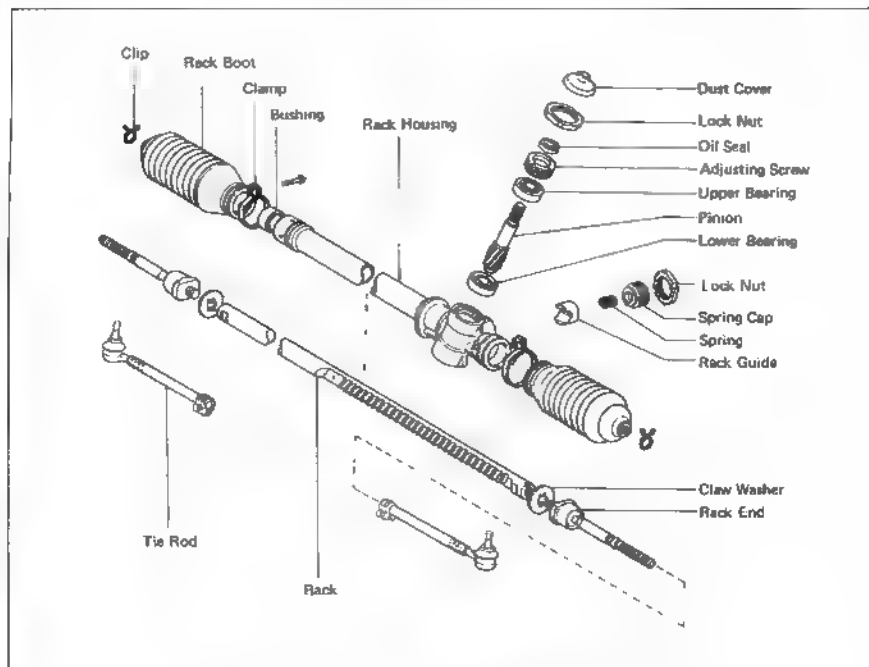
- Remove the cotter pin and nut holding the knuckle arm to the tie rod.
- Using SST, disconnect the knuckle arm from the tie rod end.

SST 09628-62011

3. REMOVE GEAR HOUSING ASSEMBLY

- Remove the gear housing bracket set bolts.
- Remove the gear housing assembly.

COMPONENTS



DISASSEMBLY OF GEAR HOUSING

1. CLAMP GEAR HOUSING IN VISE

NOTE

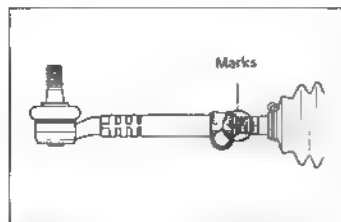
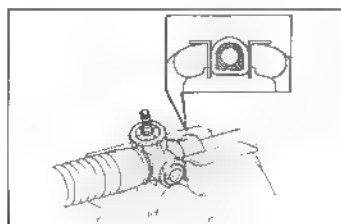
- The rack housing is made of aluminum so always use soft jaws on the vise and clamp onto the part shown in the figure.
- If clamping onto the center tube, wrap a piece of cloth around the tube and be careful not to damage the tube.

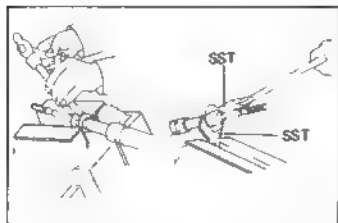
2. REMOVE TIE RODS

- Place matchmarks on the tie rod and rack end.
- Loosen the clamp bolt and remove the tie rod from the rack end.

3. REMOVE CLIPS, CLAMPS AND RACK BOOTS

- Remove the clip and clamp, and remove the rack boot.
- Mark the left and right boots accordingly.



**4. REMOVE RACK ENDS AND CLAW WASHERS**

(a) Unstake the claw washer.

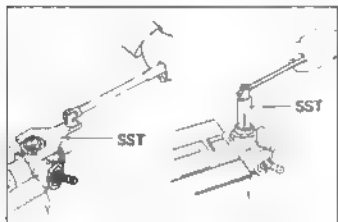
CAUTION: Avoid any impact to the rack.

(b) Using SST, remove the rack ends.

SST 09612 10092 and 09612 24011

NOTE: Mark the left and right rack ends.

(c) Remove the claw washer.

**5. REMOVE RACK GUIDE SPRING CAP LOCK NUT**

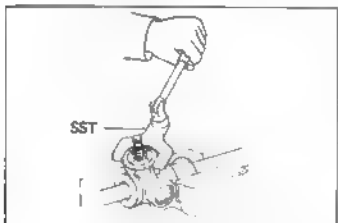
Using SST, remove the rack guide spring cap lock nut.

SST 09612 10092

6. REMOVE RACK GUIDE SPRING CAP

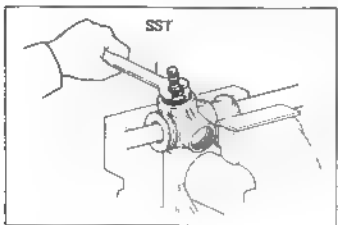
Using SST, remove the rack guide spring cap.

SST 09612 10092

7. REMOVE RACK GUIDE SPRING**8. REMOVE RACK GUIDE****9. REMOVE DUST COVER****10. REMOVE PINION BEARING ADJUSTING SCREW LOCK NUT**

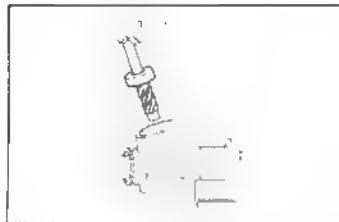
Using SST, remove the pinion bearing adjusting screw lock nut

SST 09612 10092

**11. REMOVE PINION BEARING ADJUSTING SCREW**

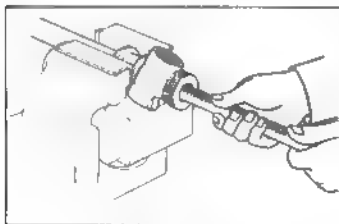
Using SST, remove the pinion bearing adjusting screw

SST 09612 10092

**12. REMOVE PINION WITH UPPER BEARING**

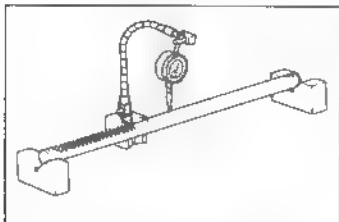
NOTE: Be careful not to damage the serrations.

- Fully pull the rack from the housing side and align the rack notched portion with the pinion.
- Remove the pinion together with the upper bearing.

**13. REMOVE RACK**

Remove the rack from the pinion side without revolving it.

NOTE If the rack is pulled from the tube side, there is possibility of damaging the bushing with the rack teeth surface.

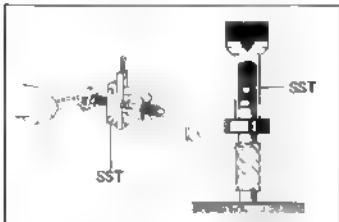
**INSPECTION AND REPAIR OF GEAR HOUSING COMPONENTS****1. INSPECT RACK**

- Check the rack for runout and for teeth wear or damage.
- Check the back surface for wear or damage.

If faulty, replace it.

Maximum runout: 0.3 mm (0.012 in.)

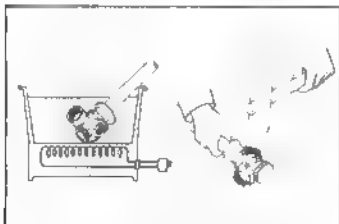
NOTE Do not use a wire brush when cleaning.

**2. INSPECT PINION BEARINGS****3. IF NECESSARY, REPLACE PINION UPPER BEARING**

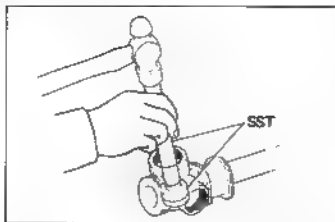
- Remove the upper bearing with SST.
- Install a new upper bearing with SST.

SST 09950-20014

SST 09612-10092

**4. IF NECESSARY, REPLACE PINION LOWER BEARING**

- Heat the rack housing to above 80°C (176°F).
- Tap the rack housing with a plastic hammer or such to remove the lower bearing by recoil.

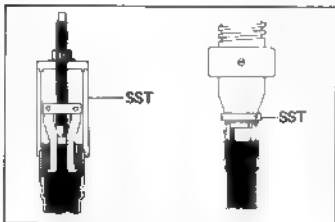


(c) Heat the rack housing to above 80°C (176°F).

(d) Install a new lower bearing with SST.

SST 09620-30010

NOTE: Observe the correct bearing direction.



5. IF NECESSARY, REPLACE RACK BUSHING

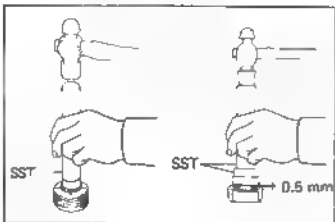
(a) Remove the rack bushing with SST

SST 09612-10092

(b) Install a new rack bushing with SST

SST 09612-10092

Press it in until the rack tube edge surface is even with the SST surface



6. IF NECESSARY, REPLACE PINION OIL SEAL

(a) Remove the pinion oil seal with SST

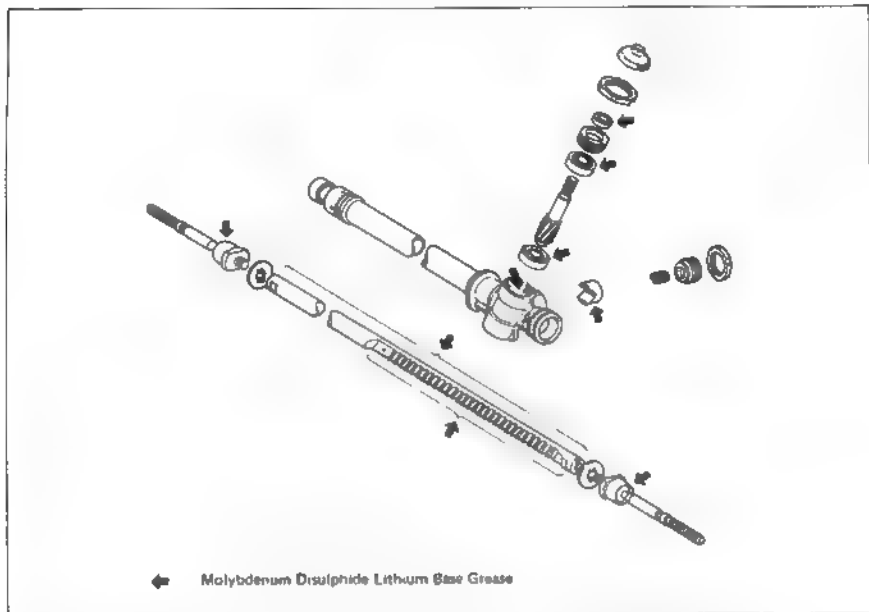
SST 09620-30010 and 09630-24012

(b) Using SST, drive in a new pinion oil seal until it is protruding 0.5 mm (0.020 in.)

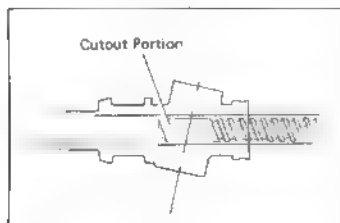
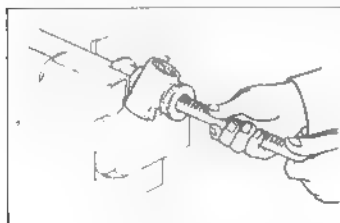
SST 09620-30010 and 09630-24012

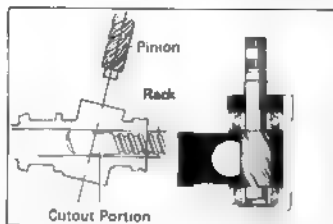
ASSEMBLY OF GEAR HOUSING

(See page SR 12)

1. PACK GREASE ON PARTS SHOWN:**2. INSTALL RACK INTO RACK HOUSING**

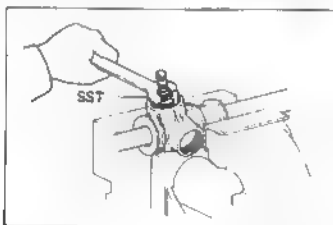
- (a) From the pinion side, install the rack into the rack housing.
- (b) Set the rack notched portion so that the pinion can be positioned inside.
- (c) Line up the cutout portion of the rack with the pinion.





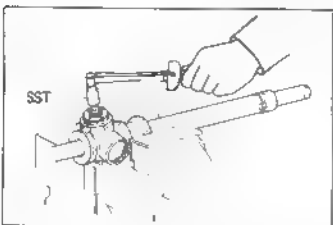
3. INSTALL PINION INTO HOUSING

Insure that the pinion end is securely in the lower bearing



4. INSTALL PINION BEARING ADJUSTING SCREW

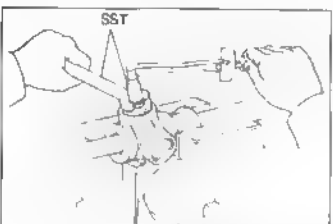
- (a) Coat liquid sealer onto the screw thread surface.
 - (b) Install the pinion bearing adjusting screw with SST
- SST 09612-10092



5. ADJUST PINION PRELOAD

- (a) Line up the cutout portion of the rack with the pinion
- (b) Using SST, tighten the pinion bearing adjusting screw to the point where the turning torque is 3.7 kg-cm (3.2 m. lb)

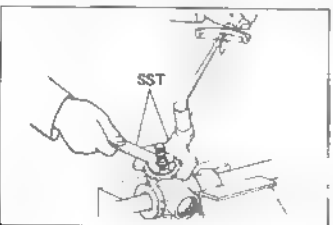
SST 09612-10092



- (c) Using SST, loosen the pinion bearing adjusting screw to the point where the turning torque is 2.3 - 3.3 kg-cm (2.0 - 2.9 in.-lb)

SST 09612 10092

Preload (turning): 2.3 - 3.3 kg-cm (2.0 - 2.9 in.-lb)



6. INSTALL PINION BEARING ADJUSTING SCREW LOCK NUT

- (a) Coat liquid sealer onto the lock nut and housing contact surface.
- (b) Install the lock nut and torque it with SST

SST 09612-10092

Torque: 1,150 kg-cm (83 ft.-lb)

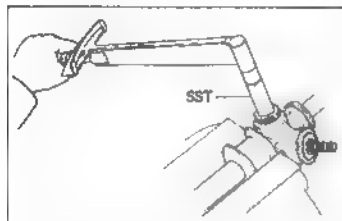
- (c) Recheck the pinion preload

If incorrect, readjust

Preload (turning): 2.3 - 3.3 kg-cm (2.0 - 2.9 in.-lb)

7. **INSTALL RACK GUIDE**
8. **INSTALL RACK GUIDE SPRING**
9. **INSTALL RACK GUIDE SPRING CAP**
 - (a) Coat liquid sealer onto the guide spring cap threads.
 - (b) Mesh the rack with the pinion.
 - (c) Install the rack guide spring cap with SST

SST 09612-10092

**III. ADJUST TOTAL PRELOAD**

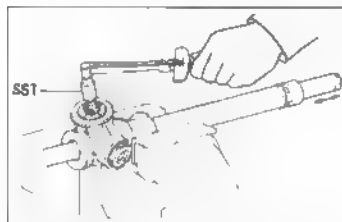
- (a) Tighten the rack guide spring cap and torque it with SST

SST 09612-10092

Torque: 250 kg-cm (18 ft-lb)

- (b) Using SST, return the rack guide spring cap 26°

SST 09612-10092

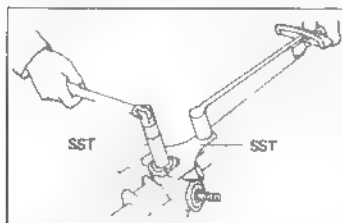


- (c) Measure the total preload with SST

SST 09612-10092

Preload (starting): 7.5 – 9.5 kg-cm (6.5 – 8.2 in.-lb)

- (d) If preload is insufficient:
Retorque the rack guide spring cap, and then return it slightly less than 12°
- (e) If there is excess preload:
Slightly return the rack guide spring cap.

**11. INSTALL RACK GUIDE SPRING CAP LOCK NUT**

- (a) Coat liquid sealer onto the lock nut thread and housing surface.

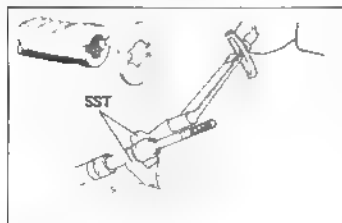
- (b) Tighten the lock nut and torque it with SST

SST 09612-10092

Torque: 700 kg-cm (51 ft-lb)

- (c) Recheck the total preload. If incorrect, readjust.

Preload (starting): 7.5 – 9.5 kg-cm (6.5 – 8.2 in.-lb)

**12. INSTALL DUST COVER****13. INSTALL CLAW WASHERS AND RACK ENDS**

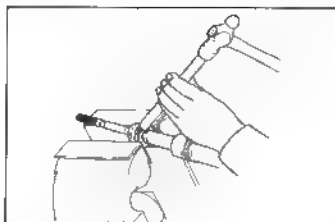
- (a) Install the claw washer.

NOTE: Align the claw of the claw washer with the rack groove.

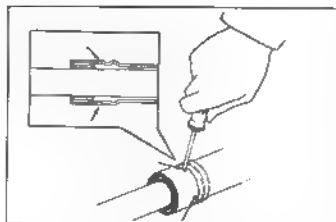
- (b) Install the rack end and torque it with SST.

SST 09612-10092 and 09612-24011

Torque: 850 kg-cm (61 ft-lb)



(c) Stake the claw washer.

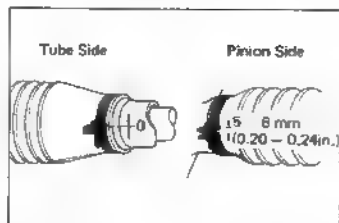


14. INSTALL RACK BOOTS, CLAMPS AND CLIPS

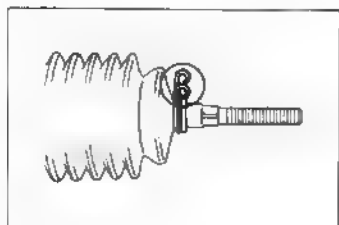
(a) Insure that the tube hole is not clogged with grease.
 NOTE: If the tube hole is clogged, the pressure inside the boot will change after it is assembled and the steering wheel turned.

(b) Install the boots.

NOTE: Be careful not to damage or twist the boots. The left and right boots are different. Be careful not to interchange them

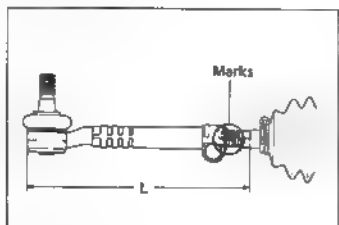


(c) Install the clamps as shown in the figure.



(d) Install the clips.

NOTE: Face the open ends outward, as shown, to avoid damage to the boots.



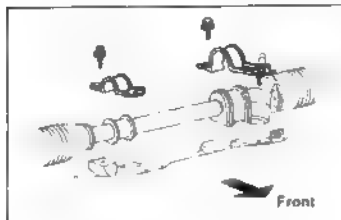
15. INSTALL TIE RODS

(a) Screw the tie rods onto the rack ends until the match marks are aligned

NOTE: The length of L in figure should be approximately 230 mm (9.06 in.).

(b) After adjusting toe-in, torque the clamp bolt.

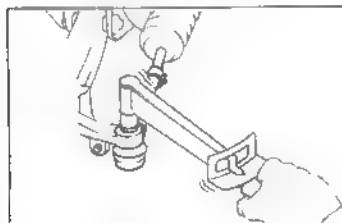
Torque: 175 kg-cm (13 ft-lb)

**INSTALLATION OF GEAR HOUSING**

(See page SR-11)

1. INSTALL GEAR HOUSING ASSEMBLY

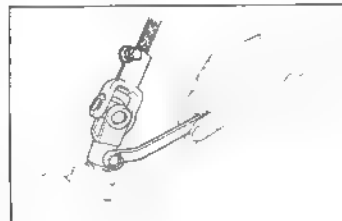
Install the four bolts and torque them.

NOTE: Be careful not to damage the boots.**Torque:** 375 kg-cm (27 ft-lb)**2. CONNECT TIE ROD ENDS TO KNUCKLE ARMS**

(a) Install the tie rod ends to the knuckle arms and torque the nuts.

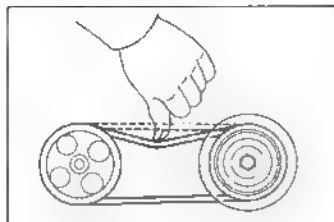
Torque: 600 kg-cm (43 ft-lb)

(b) Install a new cotter pin.

**3. INSTALL UNIVERSAL JOINT**

Install the two bolts and torque them

Torque: 360 kg-cm (26 ft-lb)**4. CHECK STEERING WHEEL FREEPLAY****5. ADJUST TOE-IN (See page FA-3)****6. CHECK STEERING WHEEL CENTER POINT**



POWER STEERING

On-Vehicle Inspection

CHECK OF DRIVE BELT TENSION

Measure the drive belt tension

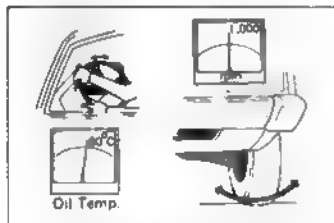
Drive belt tension: at 10 kg (22.0 lb)

New belt 7 - 9 mm (0.28 - 0.35 in.)

Used belt 9 - 14 mm (0.35 - 0.55 in.)

NOTE:

- "New belt" refers to a brand new belt which has never before been used
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the drive belt, check that it fits properly in the ribbed grooves.



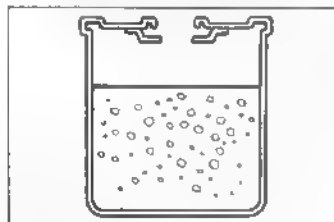
FLUID LEVEL CHECK

1. KEEP VEHICLE LEVEL

2. BOOST FLUID TEMPERATURE

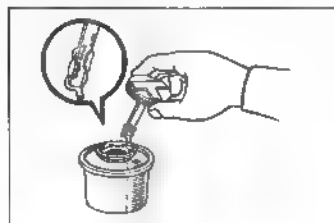
With the engine idling at 1,000 rpm or less, turn the steering wheel from lock to lock several times to boost the fluid temperature.

Fluid temperature: 80°C (176°F)



3. CHECK FOR FOAMING OR EMULSIFICATION

NOTE: Foaming and emulsification indicate the existence of air in the system or that the fluid level is too low



4. CHECK FLUID LEVEL IN RESERVOIR TANK

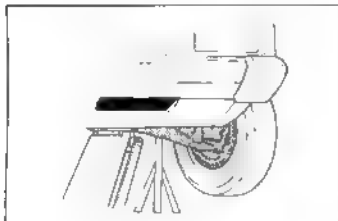
Check the fluid level and add fluid if necessary.

Fluid: ATF type DEXRON or DEXRON II

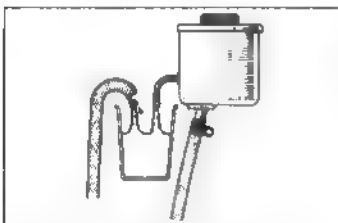
NOTE: Check that the fluid level is within the HOT LEVEL of the dipstick. If the fluid is cold, check that it is within the COLD LEVEL of the dipstick

REPLACEMENT OF POWER STEERING FLUID

1. JACK UP FRONT OF VEHICLE AND SUPPORT IT WITH STANDS

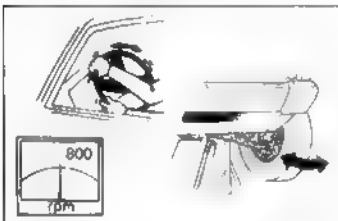


2. REMOVE FLUID RETURN HOSE FROM RESERVOIR TANK AND DRAIN FLUID INTO A CONTAINER

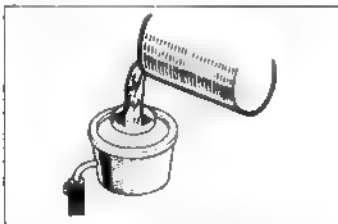


3. WITH ENGINE IDLING, TURN STEERING WHEEL FROM LOCK TO LOCK WHILE DRAINING FLUID

4. STOP ENGINE



5. FILL RESERVOIR TANK WITH FRESH FLUID
Fluid: ATF type DEXRON or DEXRON II

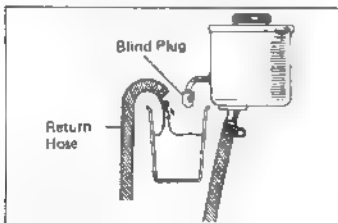


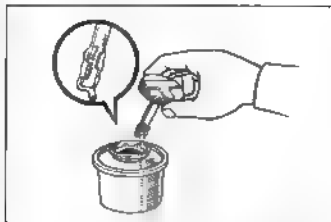
6. START ENGINE AND RUN IT AT 1,000 RPM
After 1 or 2 seconds, fluid will begin to discharge from the return hose. Stop the engine immediately at this time.

7. REPEAT STEPS 5 AND 6 FOUR OR FIVE TIMES UNTIL THERE IS NO MORE AIR IN FLUID

8. CONNECT RETURN HOSE TO RESERVOIR TANK

9. BLEED POWER STEERING SYSTEM





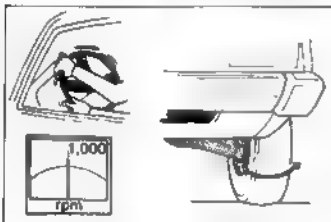
Bleeding of Power Steering System

1. CHECK FLUID LEVEL IN RESERVOIR TANK

Check the fluid level and add fluid if necessary

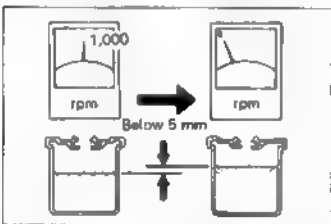
Fluid: ATF type DEXRON or DEXRON II

NOTE: Check that the fluid level is within the HOT LEVEL of the dipstick. If the fluid is cold, check that it is within the COLD LEVEL.



2. START ENGINE AND TURN STEERING WHEEL FROM LOCK TO LOCK THREE OR FOUR TIMES

Run the engine at 1,000 rpm or less

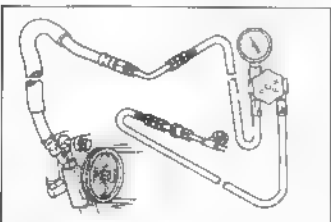


3. CHECK THAT FLUID IN RESERVOIR IS NOT FOAMY OR CLOUDY AND DOES NOT RISE OVER MAXIMUM WHEN ENGINE IS STOPPED

Measure the fluid level with the engine running. Stop the engine and measure the fluid level

Maximum rise: 5 mm (0.20 in.)

If a problem is found, repeat steps 7 and 8. Repair the vane pump if the problem persists.



Oil Pressure Check

1. CONNECT PRESSURE GAUGE

(a) Using SST, remove the pressure line from the vane pump.

SST 09631 22020

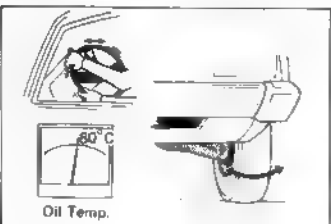
(b) Connect the gauge side of the pressure gauge to the vane pump.

(c) Connect the valve side of the pressure gauge to the pressure line.

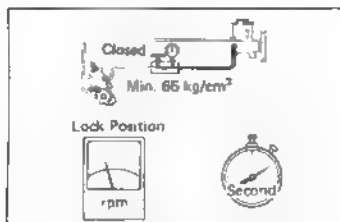
(d) Bleed the system. Start the engine and turn the steering wheel from lock to lock two or three times.

(e) Check that the fluid level is correct.

2. CHECK THAT FLUID TEMPERATURE IS AT LEAST 80°C (176°F)



Oil Temp.



3. START ENGINE AND RUN IT AT IDLE

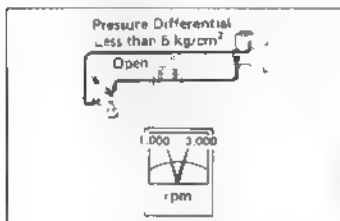
4. CHECK FLUID PRESSURE READING WITH VALVE CLOSED

Close the pressure gauge valve and observe the reading on the gauge.

Minimum pressure: 65 kg/cm² (924 psi)

NOTE Do not keep the valve closed for more than 10

If pressure is low, repair or replace the vane pump



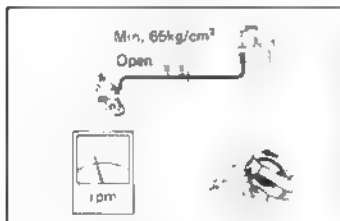
5. OPEN VALVE FULLY

6. CHECK AND RECORD PRESSURE READING AT 1,000

7. CHECK AND RECORD PRESSURE READING AT 3,000

Check that there is less than 5 kg/cm² (71 psi) difference in pressure between the 1,000 rpm and 3,000 rpm checks.

If the difference is greater, repair or replace the vane pump flow control valve.

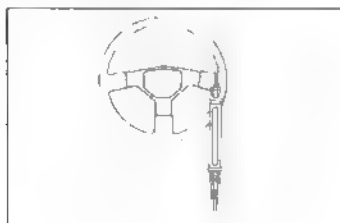


8. CHECK PRESSURE READING WITH STEERING WHEEL TURNED TO FULL LOCK

Be sure the pressure gauge valve is fully opened and the engine idling.

Minimum pressure: 65 kg/cm² (924 psi)

If pressure is low, the gear housing has an internal leak and must be repaired or replaced.



9. MEASURE STEERING EFFORT

Center the steering wheel and run the engine at idle.

Using a scale, measure the steering effort in both directions.

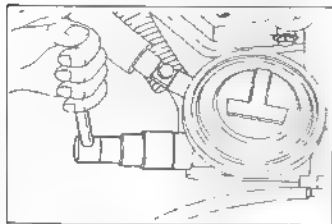
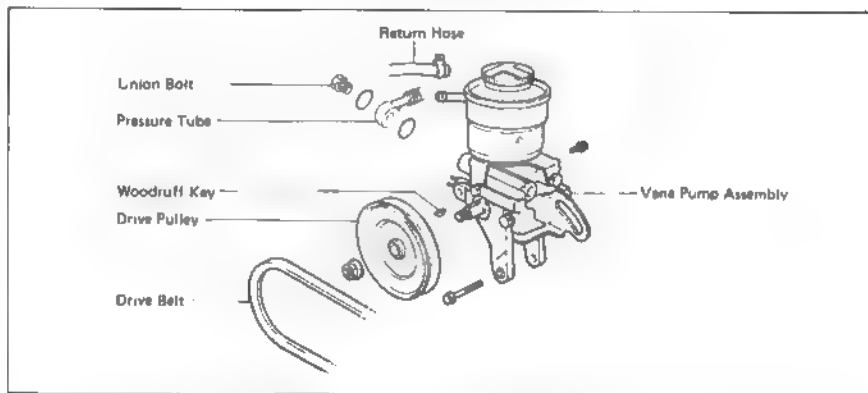
Maximum steering effort: 5.5 kg (12.1 lb)

If steering effort is excessive, repair the power steering unit

NOTE: Be sure to consider tire type, pressure and contact surface before making your diagnosis

Vane Pump

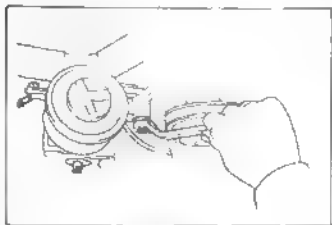
REMOVAL OF VANE PUMP



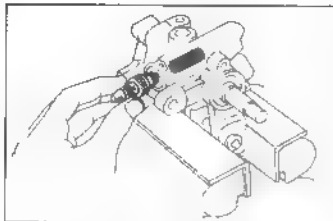
1. **TAKE OUT FLUID FROM RESERVOIR TANK WITH SYRINGE OR SUCH**
2. **DISCONNECT PRESSURE TUBE FROM VANE PUMP**
Remove the union bolt and disconnect the pressure tube from the vane pump



3. **DISCONNECT RETURN HOSE**
4. **REMOVE DRIVE BELT AND PULLEY**
 - (a) Push on the drive belt to hold the pulley in place and remove the pulley set nut.
 - (b) Loosen the adjusting bolt.
 - (c) Remove the drive belt.
 - (d) Remove the pulley and woodruff key

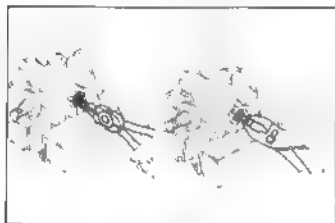


5. **REMOVE VANE PUMP**
Remove the vane pump mounting bolts, and remove the vane pump from the bracket



3. REMOVE PRESSURE PORT UNION, FLOW CONTROL VALVE AND SPRING

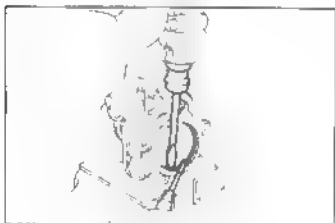
Remove the pressure port union, and remove the valve and spring.



4. REMOVE FLOW CONTROL SPRING SEAT

(a) Using snap ring pliers, remove the snap ring

(b) Temporarily install a bolt to the seat and pull out it.

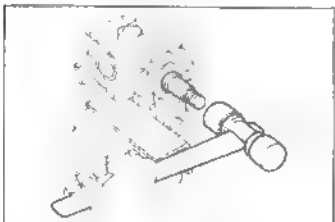


5. REMOVE REAR HOUSING

(a) Using two screwdrivers, remove the snap ring.

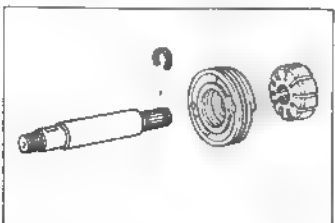
(b) Remove the rear housing and wave washer

6. REMOVE REAR SIDE PLATE, STRAIGHT PINS, VANE PLATES AND CAM RING



7. REMOVE ROTOR ASSEMBLY

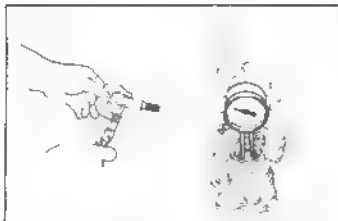
Using a plastic hammer, tap out the rotor assembly.



8. DISASSEMBLE ROTOR, SHAFT AND FRONT SIDE PLATE

Using a small screwdriver, pry out the snap ring and remove the rotor and plate from the shaft.

CAUTION Be careful not to scratch the rotor



INSPECTION OF VANE PUMP

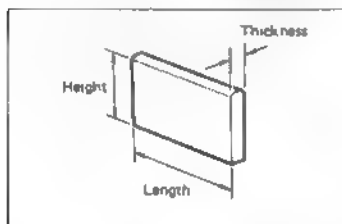
1. CHECK OIL CLEARANCE OF SHAFT AND BUSHING

Using a micrometer and calipers, check the oil clearance.

Standard clearance: 0.01 - 0.03 mm
(0.0004 - 0.0012 in.)

Maximum clearance: 0.07 mm (0.0028 in.)

If more than maximum, replace the entire vane pump.



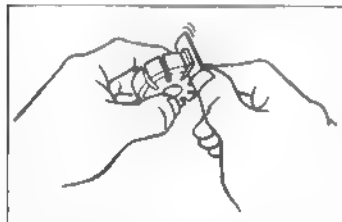
2. INSPECT ROTOR AND VANE PLATES

(a) Using calipers, measure the height, width and length of the vane plates.

Minimum height: 8.1 mm (0.319 in.)

Minimum thickness: 1.797 mm (0.0707 in.)

Minimum length: 14.988 mm (0.5901 in.)



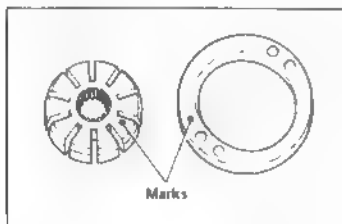
(b) Using a feeler gauge, measure the clearance between the rotor groove and vane plate.

Maximum clearance: 0.028 mm (0.0011 in.)

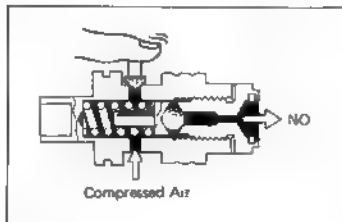
If more than maximum, replace the pump plate and/or rotor with one having the same mark as on the cam ring.

Inscribed mark: 1, 2, 3, 4 or None

NOTE: There are five vane lengths with the following rotor and cam ring marks



Rotor and cam ring mark	Vane length	mm (in.)
None	14.996 14.998	(0.59039 - 0.59047)
1	14.994 14.996	(0.59031 - 0.59039)
2	14.992 14.994	(0.59024 - 0.59031)
3	14.990 14.992	(0.59016 - 0.59024)
4	14.888 14.990	(0.59008 - 0.59016)

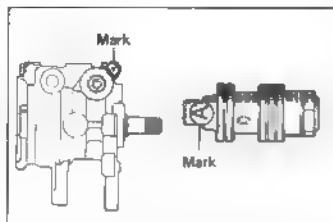


3. INSPECT FLOW CONTROL VALVE

(a) Coat the valve with fluid and check that it falls smoothly into the valve hole by its own weight

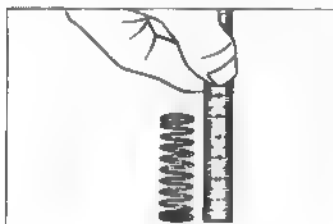
(b) Check the flow control valve for leakage

Close one of the holes and apply compressed air [4 or 5 kg/cm² (57 or 71 psi)] into the opposite side, and confirm that air does not come out from the end hole.



If necessary, replace the valve with one having the same letter as on the front housing.

Inscribed mark: A, B, C, D, E or F

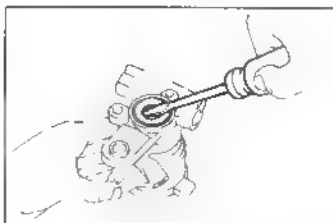


4. INSPECT FLOW CONTROL SPRING

Using a scale, measure the free length of the spring.

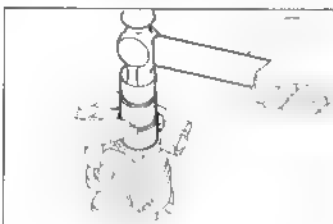
Spring length: 47 – 50 mm (1.85 – 1.97 in.)

If not within specification, replace the spring.

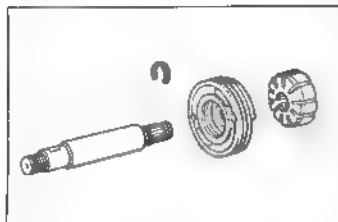


5. IF NECESSARY, REPLACE OIL SEAL

(a) Using a screwdriver, pry out the oil seal



(b) Using a 23-mm socket wrench and hammer, drive in a new oil seal.



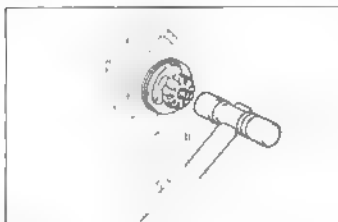
ASSEMBLY OF VANE PUMP

(See page SR 26)

NOTE: Coat all sliding surfaces with fluid before assembly.

1. INSTALL FRONT SIDE PLATE, O-RING AND ROTOR TO SHAFT

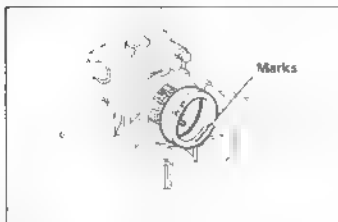
- (a) Install new O-rings to the side plate
- (b) Place the side plate on the shaft
- (c) Place the rotor on the shaft with the inscribed mark facing upward, and secure them with a snap ring.



2. INSTALL LONG STRAIGHT PIN AND ROTOR ASSEMBLY TO FRONT HOUSING

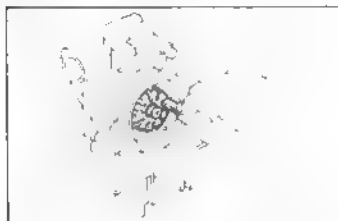
- (a) Apply MP grease to the oil seal
- (b) Install the long straight pin in the housing.
- (c) Using a plastic hammer, tap in the rotor assembly.

NOTE: Be careful not to damage the oil seal and O-rings.



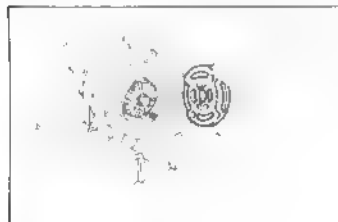
3. INSTALL SHORT STRAIGHT PIN AND CAM RING

- (a) Install the short straight pin.
- (b) Insert the cam ring with the inscribed mark facing outward



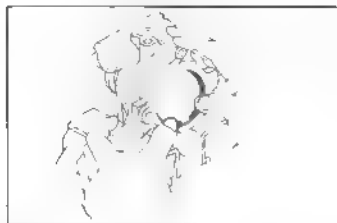
4. INSTALL VANE PLATES

Install the vane plates with the round end facing outward

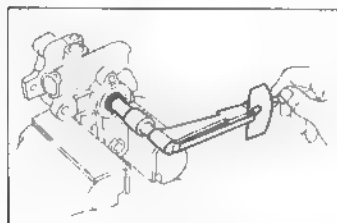


5. INSTALL REAR SIDE PLATE AND O-RING

- (a) Install a new O-ring to the side plate.
- (b) Align the holes of the side plate and pins, and install the side plate

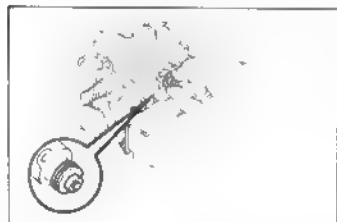
**6. INSTALL REAR HOUSING**

- (a) Install the wave washer.
- (b) Install a new O-ring to the rear housing.
- (c) Using a plastic hammer, tap in the rear housing.
- (d) Install the snap ring.

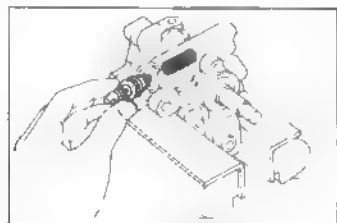
**7. CHECK SHAFT ROTATION CONDITION**

- (a) Check that the shaft rotates smoothly without abnormal noise.
- (b) Temporarily install the pulley nut and check the rotating torque.

Rotating torque: Less than 2.8 kg-cm (2.4 in.-lb)

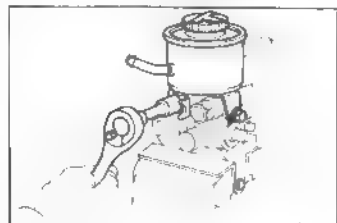
**8. INSTALL FLOW CONTROL SPRING SEAT, O-RING AND SNAP RING**

- (a) Install a new O-ring in the spring seat.
- (b) Insert the spring seat, and using snap ring pliers, install the snap ring.

**9. INSTALL SPRING, FLOW CONTROL VALVE, O-RINGS AND PRESSURE PORT UNION**

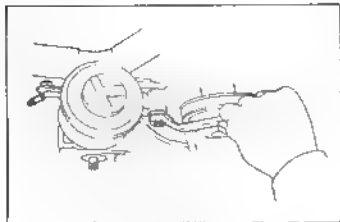
- (a) Install the spring and the valve into the housing.
- (b) Install a new O-ring in the groove of the pressure port union.
- (c) Torque the pressure port union.

Torque: 700 kg-cm (51 ft-lb)

**10. INSTALL O-RING, RESERVOIR TANK AND BRACKET**

- (a) Install a new O-ring to the reservoir tank.
- (b) Install the reservoir tank, and bracket and torque the bolts.

Torque: 12 mm bolt 130 kg-cm (9 ft-lb)
14 mm bolt 420 kg-cm (30 ft-lb)

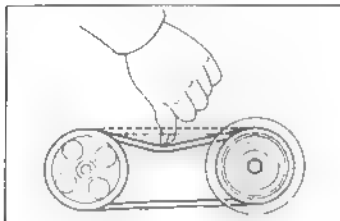


INSTALLATION OF VANE PUMP

(See page SR-25)

1. INSTALL VANE PUMP

Place the pump in position and provisionally install the three mounting bolts.



2. INSTALL DRIVE PULLEY AND BELT

(a) Install the woodruff key, pulley and set nut.

(b) Install the drive belt

(c) Adjust the drive belt tension and torque the mounting bolts.

Torque: 400 kg-cm (29 ft-lb)

Drive belt tension: at 10 kg (22.0 lb)

New belt 7 - 9 mm (0.28 - 0.35 in.)

Used belt 8 - 14 mm (0.35 - 0.55 in.)

NOTE

• "New belt" refers to a brand new belt which has never before been used

• "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more

• After installing the drive belt, check that it fits properly in the ribbed grooves

(d) Push down on the drive belt to hold the pulley in place, and torque the pulley set nut

Torque: 440 kg-cm (32 ft-lb)



3. CONNECT PRESSURE TUBE TO VANE PUMP

Connect the pressure tube and torque the union bolt.

Torque: 475 kg-cm (34 ft-lb)



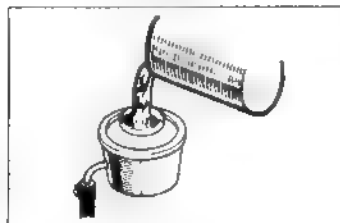
4. CONNECT RETURN HOSE TO RESERVOIR TANK

5. FILL RESERVOIR TANK WITH FLUID

Fluid: ATF type DEXRON or DEXRON II

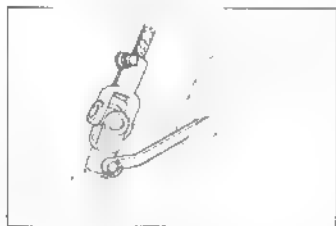
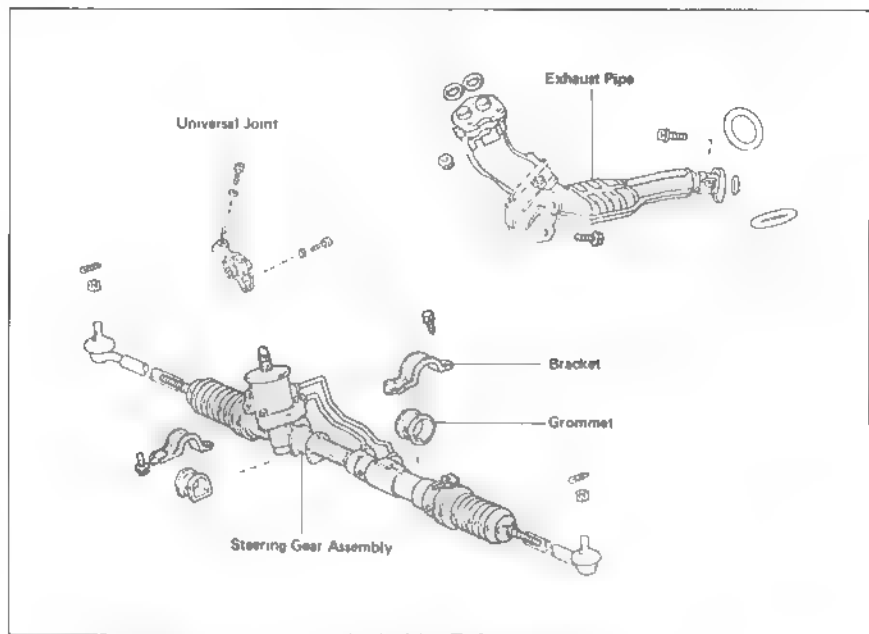
6. BLEED POWER STEERING SYSTEM (See page SR-23)

7. CHECK FOR FLUID LEAKS



Gear Housing

REMOVAL OF STEERING GEAR HOUSING



1. REMOVE UNIVERSAL JOINT

- Remove the two set bolts.
- Remove the universal joint.

2. DISCONNECT TIE ROD ENDS (See step 2 on page SR-11)

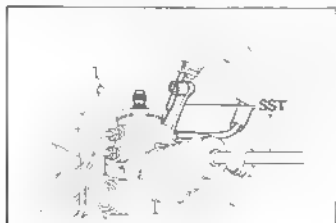
3. RAISE VEHICLE

4. REMOVE EXHAUST PIPE

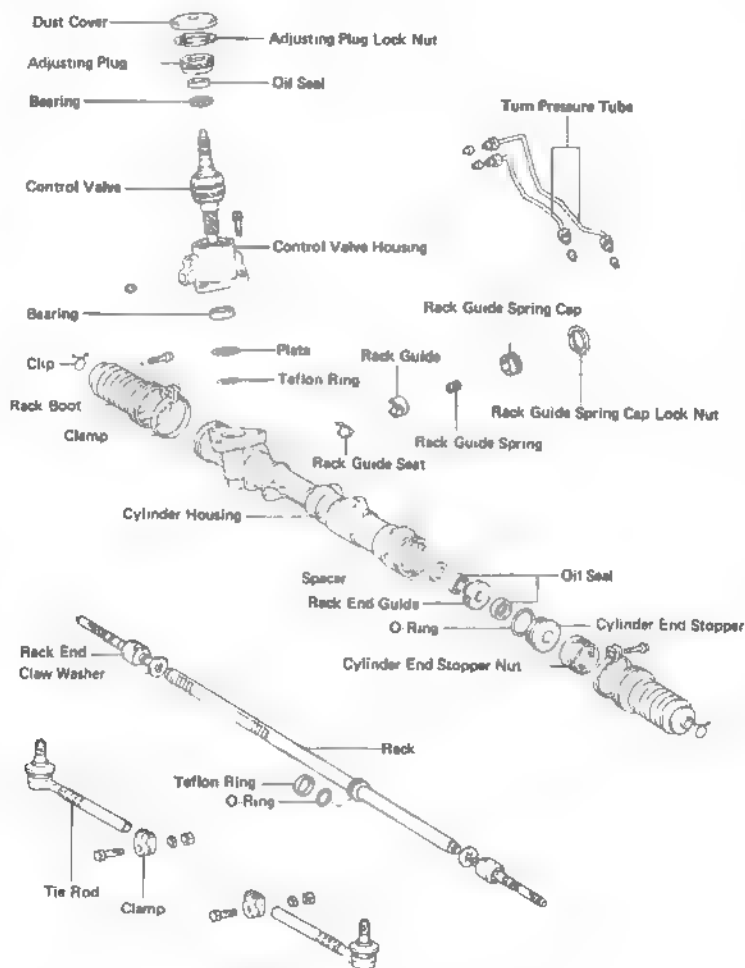
5. DISCONNECT RETURN AND PRESSURE LINES

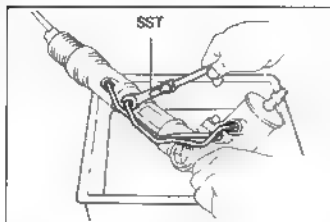
Using SST, disconnect return and pressure lines.
Use a container to catch the power steering fluid.
SST 09631-22020

6. REMOVE GEAR HOUSING ASSEMBLY



COMPONENTS



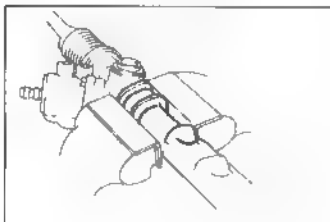


DISASSEMBLY OF STEERING GEAR HOUSING

1. REMOVE TURN PRESSURE RIGHT AND LEFT TUBES

Using SST, remove the turn pressure tubes.

SST 09631 22020



2. CLAMP GEAR HOUSING IN VISE NOTE:

- The rack housing is made of aluminum, so always use soft jaws on the vise and clamp onto the part shown in the figure.
- If necessary to clamp onto the center tube, wrap a piece of cloth around it to avoid damage.

3. REMOVE TIE RODS

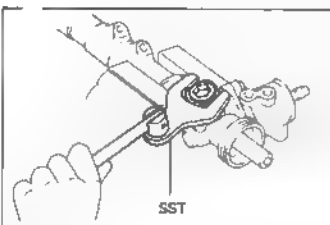
(See step 2 on page SR-12)

4. REMOVE CLIPS, CLAMPS AND RACK BOOTS

- (a) Remove the clip and clamp, and remove the rack boot
- (b) Mark the left and right boots accordingly

5. REMOVE RACK ENDS AND CLAW WASHERS

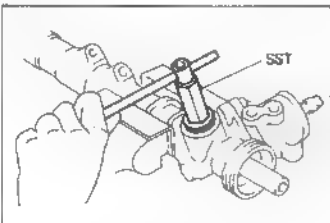
(See step 4 on page SR-13)



6. REMOVE RACK GUIDE SPRING CAP LOCK NUT

Using SST, remove the rack guide spring cap lock nut

SST 09612 24011



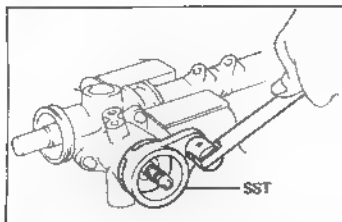
7. REMOVE RACK GUIDE SPRING CAP

Using SST, remove the rack guide spring cap

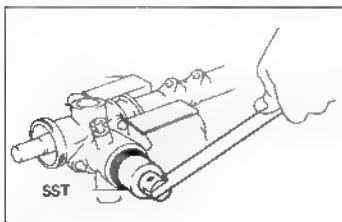
SST 09612-24011

8. REMOVE RACK GUIDE SPRING, RACK GUIDE AND SEAT

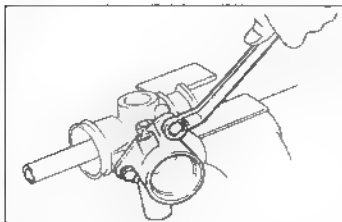
9. REMOVE DUST COVER

**10. REMOVE ADJUSTING PLUG LOCK NUT**

Using SST, remove the adjusting plug lock nut
SST 09630-00010

**11. REMOVE ADJUSTING PLUG**

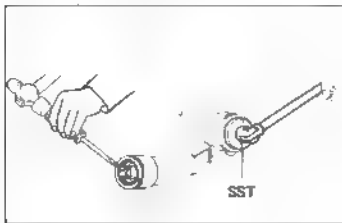
Using SST, remove the adjusting plug.
SST 09630-00010

**12. REMOVE CONTROL VALVE**

Remove the bearing, control valve, bearing, plate and teflon ring.

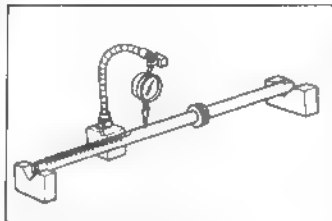
13. REMOVE CONTROL VALVE HOUSING

- (a) Remove the three bolts.
- (b) Remove the control valve housing and O-rings.

**14. REMOVE CYLINDER END STOPPER NUT**

- (a) Unstake the cylinder end stopper nut
- (b) Remove the cylinder end stopper nut with SST
SST 09631 12010

15. REMOVE STEERING RACK WITH CYLINDER END STOPPER, O-RING AND RACK END GUIDE



INSPECTION AND REPAIR OF GEAR HOUSING COMPONENTS

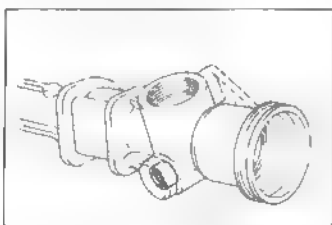
1. INSPECT RACK

- (a) Check the rack for runout and for teeth wear or damage.

- (b) Check the back surface for wear or damage.

If faulty, replace it.

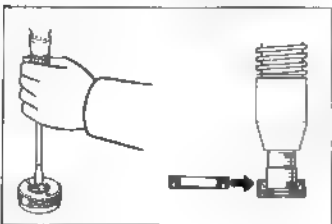
Maximum runout: 0.3 mm (0.012 in.)



2. INSPECT NEEDLE ROLLER BEARING

- (a) Check for wear or damage.

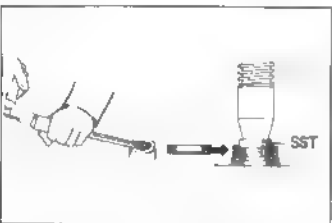
- (b) If necessary, replace the cylinder housing assembly



3. IF NECESSARY, REPLACE ADJUSTING PLUG OIL SEAL

- (a) Using a screwdriver, remove the oil seal.

- (b) Install a new oil seal with a socket wrench.

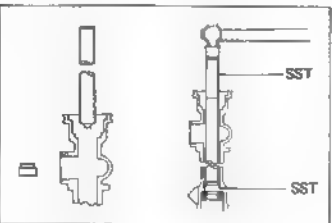


4. IF NECESSARY, REPLACE CYLINDER END STOPPER OIL SEAL

- (a) Using a screwdriver, remove the oil seal

- (b) Using SST, install a new oil seal

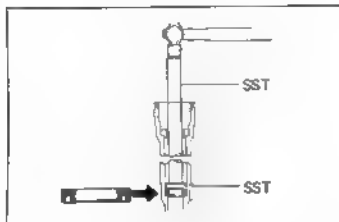
SST 09631-12040



5. IF NECESSARY, REPLACE CYLINDER HOUSING OIL SEAL

- (a) Using SST, remove the oil seal with the spacer

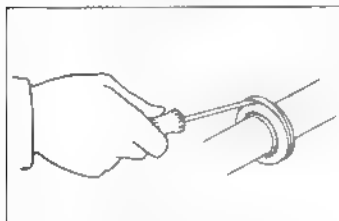
SST 09631-12020 and 09631-12030



(b) Insert SST into the oil seal and spacer

SST 09631 12020 and 09631 12040

(c) Tap in the spacer and oil seal softly through the rack end guide.



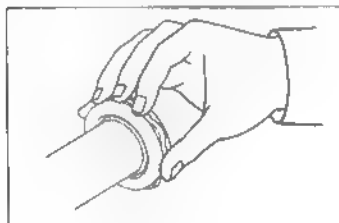
6. IF NECESSARY, REPLACE TEFLON RING AND O-RING

(a) Remove the teflon ring and O ring.

(b) Install a new O-ring.

(c) Expand a new teflon ring with your fingers.

CAUTION: Do not expand the ring more than necessary.



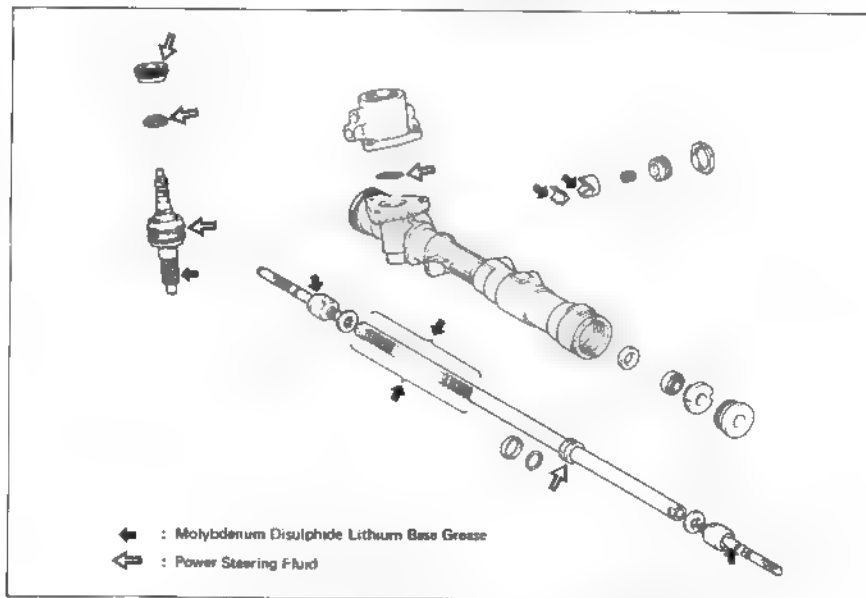
(d) Install the teflon ring into the piston groove of the rack

(e) Snug down the teflon ring with your fingers so that it fits tight in the groove

ASSEMBLY OF STEERING GEAR HOUSING

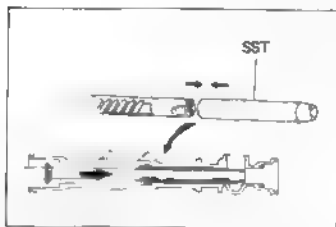
(See page SR-34)

1. COAT FOLLOWING PARTS WITH POWER STEERING FLUID OR GREASE



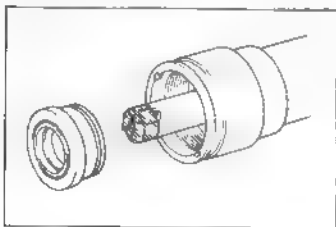
2. INSTALL RACK, RACK END GUIDE AND CYLINDER END STOPPER

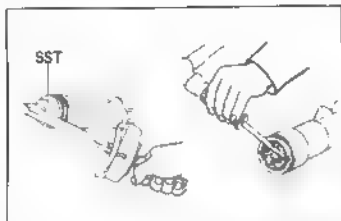
- (a) Install SST to the rack.
SST 09631 16020
- (b) Coat SST with power steering fluid.
- (c) Insert the rack into the cylinder
- (d) Remove SST



- (e) Install a new O-ring to the cylinder end stopper
- (f) Wrap cellophane tape or such around the end of rack, and push on the rack end guide and cylinder end stopper

NOTE Be careful not to damage the oil seal lip.





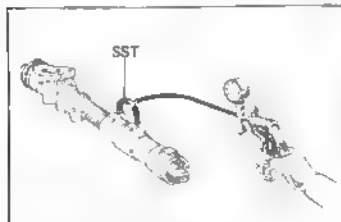
3. INSTALL CYLINDER END STOPPER NUT

- (a) Using SST, torque the stopper nut.

SST 09631 12010

Torque: 1,750 kg-cm (127 ft-lb)

- (b) Using a hammer and chisel or screwdriver, stake the stopper nut



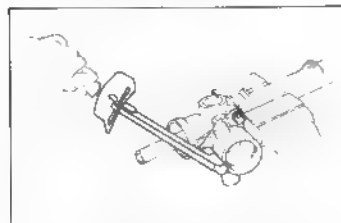
4. TEST OF AIR TIGHTNESS

- (a) Install SST to the union of the cylinder housing

SST 09631-12050

- (b) Apply 400 mmHg (15.75 in Hg) vacuum for about 30 seconds

- (c) Check that there is no change in the vacuum



5. INSTALL CONTROL VALVE HOUSING

- (a) Install new O-rings to the valve housing

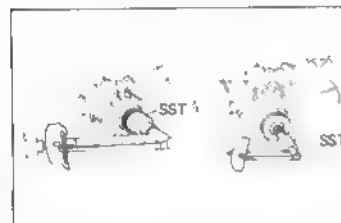
- (b) Install the valve housing with the three bolts.

- (c) Torque the bolts.

Torque: 185 kg-cm (13 ft-lb)

6. INSTALL CONTROL VALVE

Install the teflon ring, plate, bearing, control valve and bearing



7. ADJUST CONTROL VALVE SHAFT PRELOAD

- (a) Install the adjusting plug and torque it with SST

SST 09630-00010

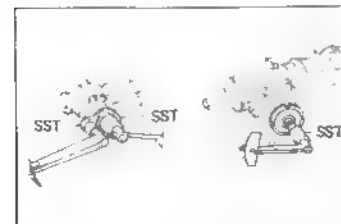
Torque: 100 kg-cm (7 ft-lb)

- (b) Measure the preload with SST

SST 09616 00010

Preload (turning): 4.0 - 6.5 kg-cm (3.5 - 5.6 in.-lb)

- (c) If the preload is not as specified, correct it by tightening or loosening the adjusting plug



8. INSTALL ADJUSTING PLUG LOCK NUT

- (a) Using SST, install and torque the lock nut

SST 09630 00010

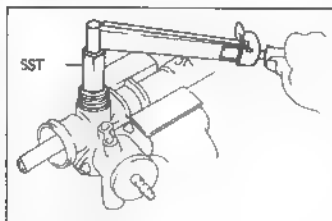
Torque: 500 kg-cm (36 ft-lb)

- (b) Recheck the preload.

If incorrect, readjust.

Preload (turning): 4.0 - 6.5 kg-cm (3.5 - 5.6 in.-lb)

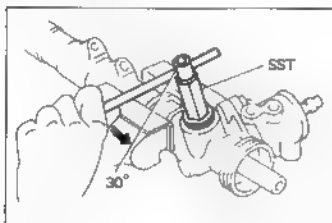
9. INSTALL DUST COVER

**10. ADJUST TOTAL PRELOAD**

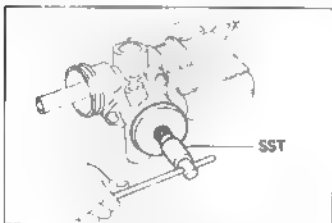
- (a) Install the seat, rack guide and rack guide spring.
- (b) Coat liquid sealer onto the threads of the rack guide spring cap.
- (c) Install the rack guide spring cap with SST and torque it.

SST 09612-24011

Torque: 250 kg-cm (18 ft-lb)

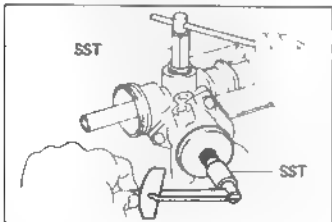


- (d) Return the spring cap 30° with SST



- (e) Using SST, turn the control valve shaft and operate the steering rack 2 full strokes to snug it down.

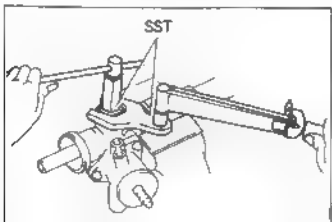
SST 09616-00010



- (f) Using SST and a torque wrench, turn the rack guide spring cap until the preload is within specification.

SST 09612-24011 and 09616-00010

Preload (turning): 5 – 10 kg-cm (4.3 – 8.7 in.-lb)



- (g) Coat the lock nut and rack housing contact surfaces with liquid sealer.

- (h) Tighten the rack guide spring cap lock nut and torque it with SST.

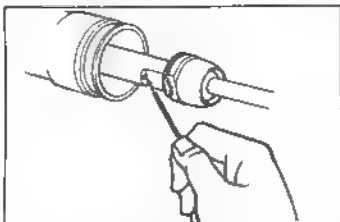
SST 09612-24011

Torque: 700 kg-cm (51 ft-lb)

- (i) Recheck the total preload

If incorrect, readjust.

Preload (turning): 5 – 10 kg-cm (4.3 – 8.7 in.-lb)

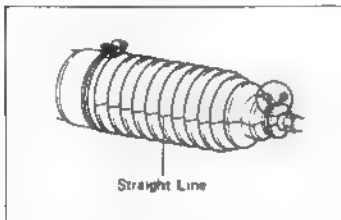


11. INSTALL CLAW WASHERS AND RACK ENDS (See step 13 on page SR-18)

12. INSTALL RACK BOOTS, CLAMPS AND CLIPS

- (a) Insure that the tube hole is not clogged with grease.

NOTE If the tube hole is clogged, the pressure inside the boot will change after it is assembled and the handle turned.



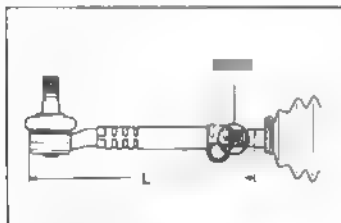
- (b) Install the boots.

NOTE: Be careful not to damage or twist the boots.

- (c) Install the clamps.

- (d) Install the clips.

NOTE: Face the open ends outward, as shown, to avoid damage to the boots.



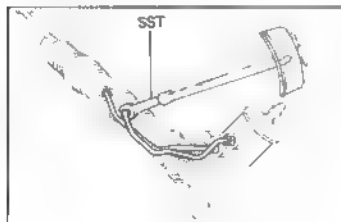
13. INSTALL TIE ROD

- (a) Screw the tie rods onto the rack ends until the match marks are aligned

NOTE: The length of L in the figure should be approximately 235 mm (9 25 in.)

- (b) After adjusting toe-in, torque the clamp bolt.

Torque: 175 kg-cm (13 ft-lb)



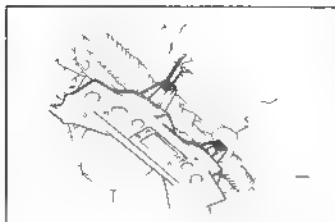
14. INSTALL TURN PRESSURE RIGHT AND LEFT TUBES

Using SST, tighten the nuts and torque them

NOTE: First torque the nuts of the cylinder housing.

SST 09631 22020

Torque: 300 kg-cm (22 ft-lb)



INSTALLATION OF STEERING GEAR HOUSING

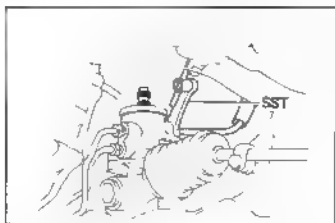
(See page SR-33)

1. INSTALL STEERING GEAR HOUSING ASSEMBLY

Install the four bolts and torque them.

NOTE Be careful not to damage the boots and tubes.

Torque: 375 kg-cm (27 ft-lb)

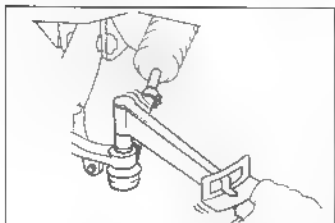


2. CONNECT RETURN AND PRESSURE LINES

Using SST, connect the return and pressure lines and torque them.

SST 09631-22020

Torque: 450 kg-cm (33 ft-lb)



3. CONNECT TIE ROD ENDS TO KNUCKLE ARMS

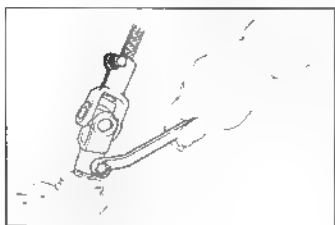
(a) Install the tie rod ends to the knuckle arms and torque the nuts.

Torque: 600 kg-cm (43 ft-lb)

(b) Install new cotter pins.

4. INSTALL EXHAUST PIPE

5. LOWER VEHICLE



6. INSTALL UNIVERSAL JOINT

Install the universal joint and torque the two bolts.

Torque: 360 kg-cm (26 ft-lb)

7. FILL WITH POWER STEERING FLUID

(See page SR-22)

8. BLEED SYSTEM (See page SR-23)

9. CHECK FOR FLUID LEAKS

10. ADJUST TOE-IN (See page FA-3)

11. CHECK STEERING WHEEL CENTER POINT

BODY ELECTRICAL SYSTEM

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PRECAUTIONS	BE-2
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SWITCHES	BE-9
LIGHTING	BE-11
HEADLIGHT CLEANER	BE-17
WIPER AND WASHER	BE-18
INSTRUMENTS AND SENDER GAUGES	BE-21
REAR WINDOW DEFOGGER	BE-31
HEATER	BE-33
SUN ROOF	BE-38
RADIO, STEREO TAPE PLAYER AND ANTENNA	BE-37
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PRECAUTIONS

TAKE CARE WHEN INSPECTING HEADLIGHT CIRCUIT

WARNING. With the headlight switch OFF, disconnect the pink fusible link before beginning work.

WIRING COLOR CODE

Wire colors are indicated by an alphabetical code.

The 1st letter indicates the basic wire color and the 2nd indicates the stripe color

B = Black

G = Green

L = Light Blue

O = Orange

R = Red

W = White

BR = Brown

GR = Gray

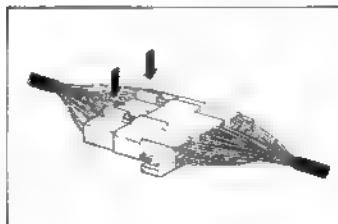
LG = Light Green

P = Pink

V = Violet

Y = Yellow

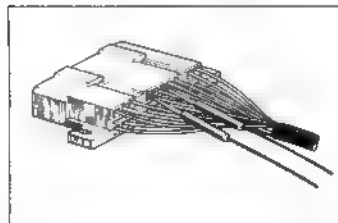
Example: R-G indicates a Red wire with a Green stripe



BULKHEAD TYPE CONNECTOR HANDLING AND INSPECTION

DISCONNECT BULKHEAD TYPE CONNECTOR

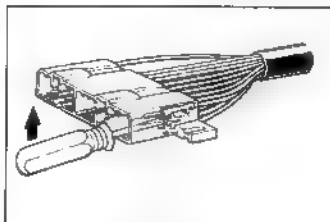
To remove the connector, push in the lock levers shown in the figure, and pull out



INSPECT BULKHEAD TYPE CONNECTOR

When checking the continuity or voltage with a circuit tester, insertion of the test probe into the receptacle connector may open the fitting to the connector and result in poor contact

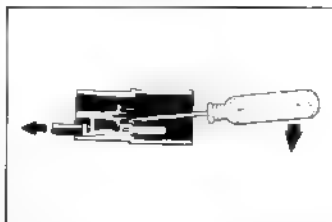
Therefore, ensure that the test probe is inserted only from the wire harness side as shown in the figure.



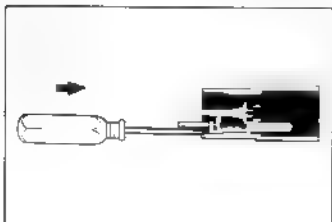
REPLACEMENT OF TERMINAL

REMOVE TERMINALS FROM BULKHEAD CONNECTOR

- (a) From the open end, insert a miniature screwdriver between the locking lugs and terminal



- (b) Pry up the locking lugs with the screwdriver and pull the terminal out from the rear



INSTALL TERMINALS TO BULKHEAD CONNECTOR

- (a) Push in the terminal until it is securely locked in the connector lug.
(b) Pull on the wire to confirm that it is securely locked

INSPECTION OF CIRCUIT AND CONNECTOR

INSPECT CIRCUIT

When inspecting the circuit, refer to the diagram at the back of the manual.

INSPECT CONNECTOR

All connectors are shown from the component side. Therefore, when inspecting from the body side, the left and right terminal connections will be in reverse.

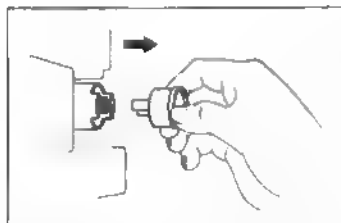
REPLACEMENT OF FUSE

Install a new fuse with the correct amperage.

CAUTION:

1. Turn off all electrical components and the ignition switch before replacing a fuse. Do not exceed the fuse amp rating.
2. Always use a fuse puller for removing and inserting a fuse. Remove and insert straight in and out without twisting. Twisting could force open the terminals too much, resulting in a bad connection.

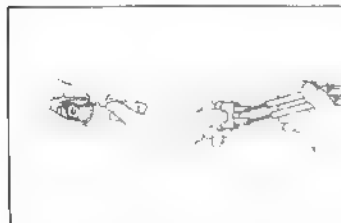
If a fuse continues to blow, a short circuit is indicated. The system must be checked by a qualified technician.



RESET CIRCUIT BREAKER

1. REMOVE CIRCUIT BREAKER

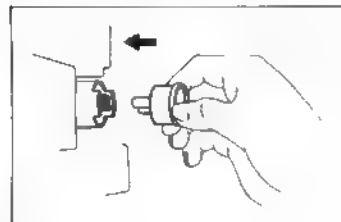
- (a) Remove the kick panel
- (b) Remove the circuit breaker
- (c) Unlock the stopper and pull out the circuit breaker



2. RESET CIRCUIT BREAKER

- (a) Insert the needle into the reset hole and push it
- (b) Using an ohmmeter, check that there is continuity between both terminals of the circuit breaker

If there is no continuity, replace the circuit breaker



3. INSTALL CIRCUIT BREAKER

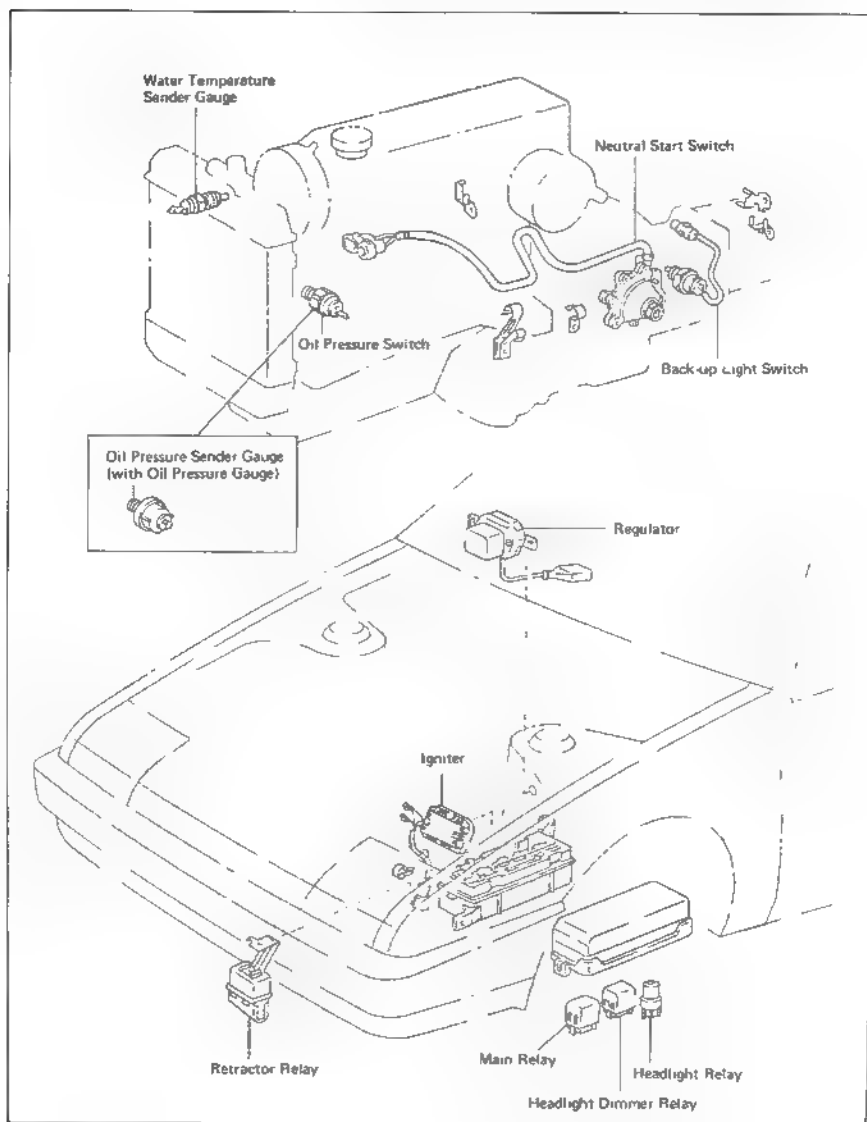
- (a) Assemble the circuit breaker into the case
- (b) Install the circuit breaker

NOTE If a circuit breaker continues to cut out, a short circuit is indicated. The system must be checked by a qualified technician

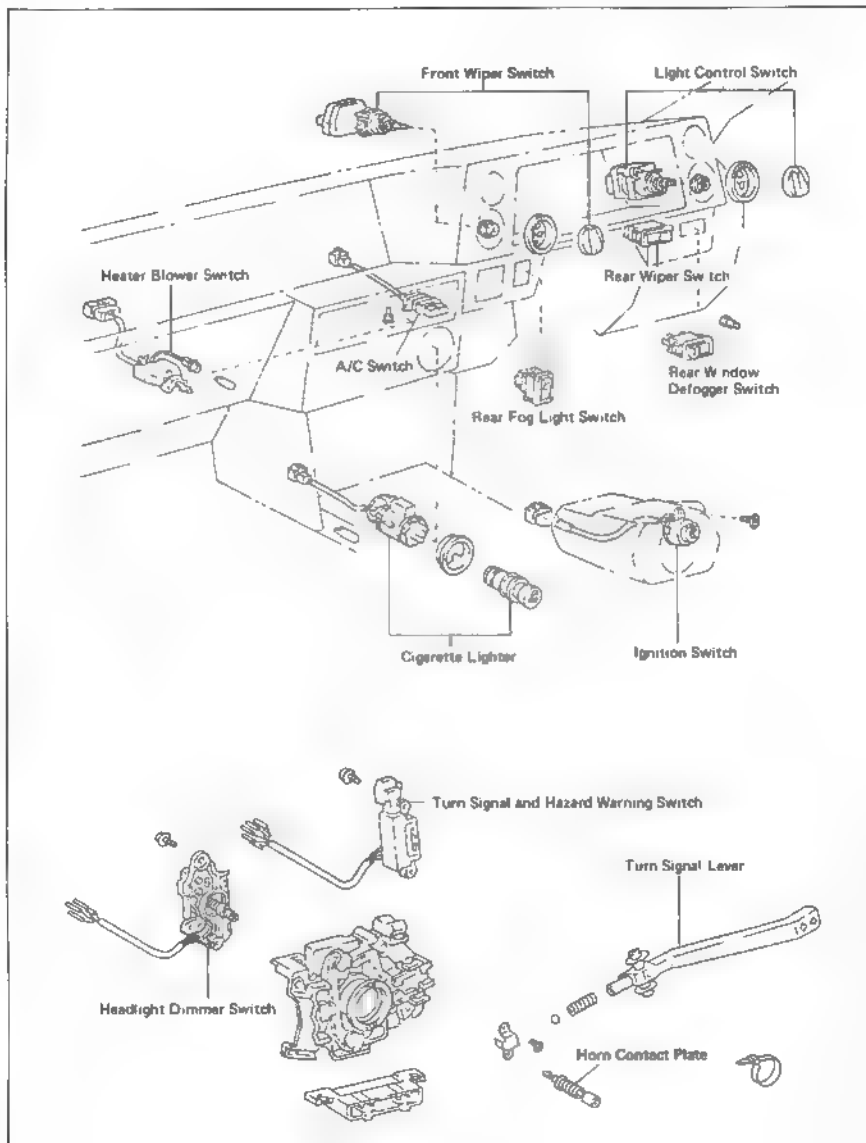
- (c) Install the kick panel.

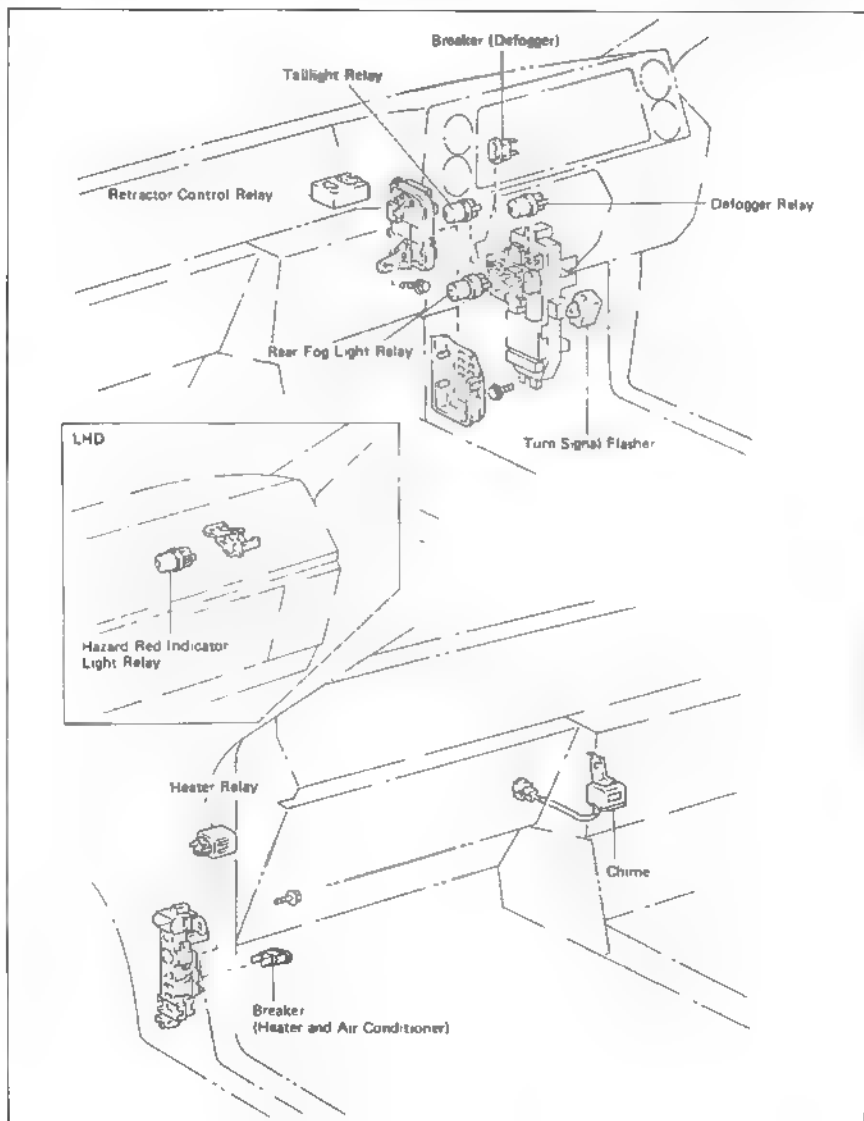
LOCATION OF SWITCHES AND RELAYS

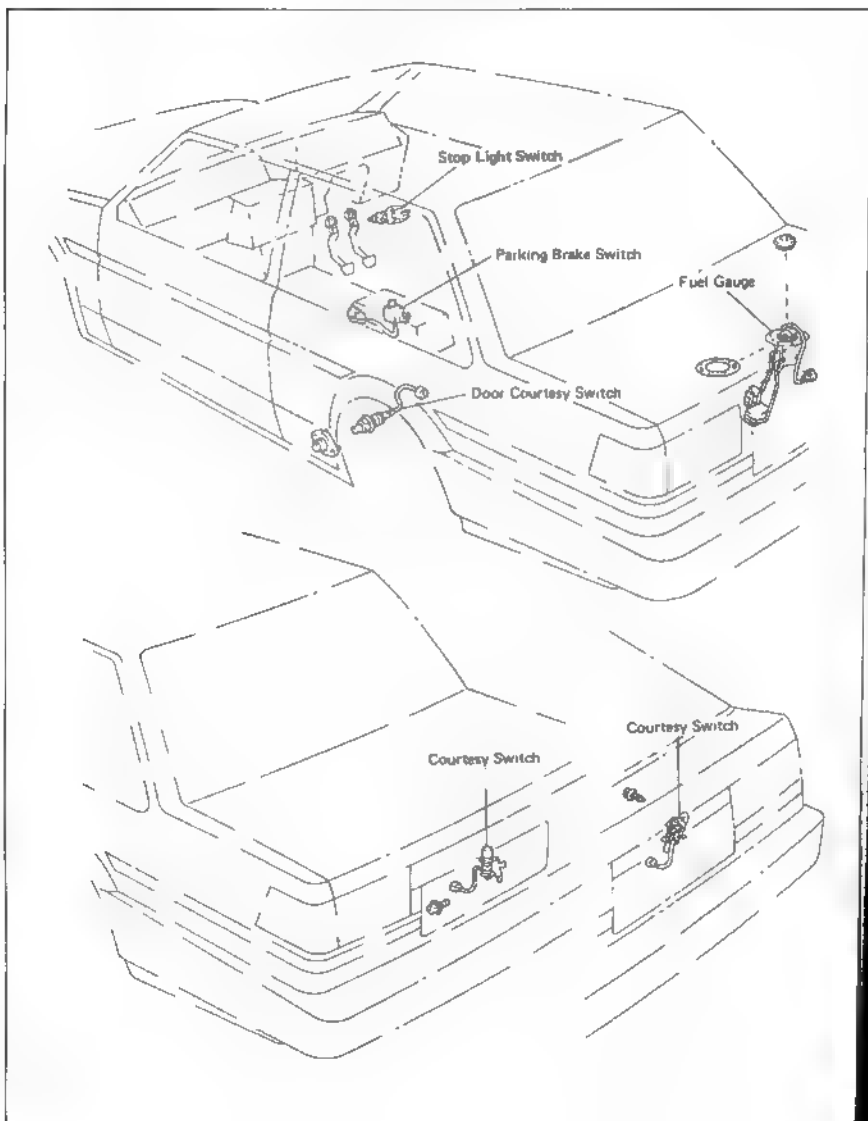
ENGINE COMPARTMENT SWITCHES AND RELAYS

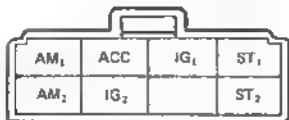


INSTRUMENT PANEL SWITCHES AND RELAYS



**PASSENGER COMPARTMENT SWITCHES
AND RELAYS**

**PASSENGER AND LUGGAGE COMPARTMENT
SWITCHES AND RELAYS**



SWITCHES

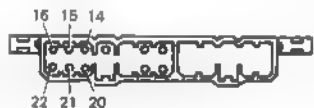
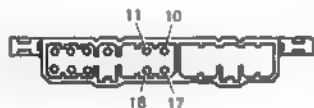
Ignition Switch

INSPECTION OF IGNITION SWITCH

INSPECT SWITCH CONTINUITY

Terminal Switch position	Terminal (Wire color)	AM ₁ (B-R)	ACC (L-R)	IG ₁ (B-Y)	ST ₁ (B-W)	AM ₂ (B-R)	IG ₂ (B-W)	ST ₂ (B-R)
LOCK								
ACC		○—○						
ON		○—○	○—○	○—○		○—○		
START		○—○	○—○	○—○		○—○	○—○	○—○

If continuity is not as specified, replace the switch.



Combination Switch

INSPECTION OF COMBINATION SWITCH

1. INSPECT HEADLIGHT DIMMER SWITCH

Inspect the switch continuity between terminals.

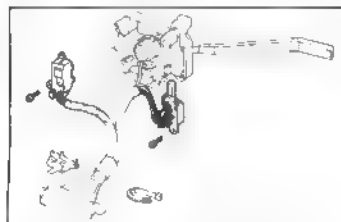
Terminal Switch position	Terminal (Wire color)	10 FD (W-B)	18 H _U (R-Y)	17 H _L (R-G)	11 H _F (R-W)
Headlight Flasher		○—○	○—○		○—○
Low Beam		○—○	○—○	○—○	
High Beam		○—○	○—○		

2. INSPECT TURN SIGNAL AND HAZARD WARNING SWITCH

Inspect switch continuity between terminals

Terminal Switch position	Terminal (Wire color)	14 T _L (G-B)	20 T _B (G-W)	15 T _R (G-Y)	21 B ₁ (G-L)	18 F (G)	22 B ₂ (G-O)
Turn Signal	L	○—○			○—○		
	N				○—○		
	R		○—○				
Hazard	ON	○—○	○—○	○—○		○—○	

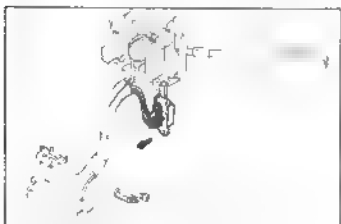
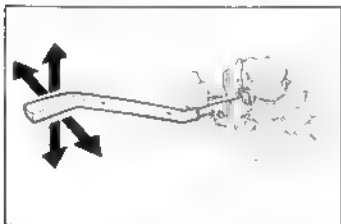
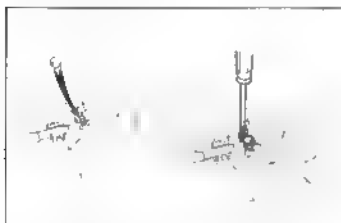
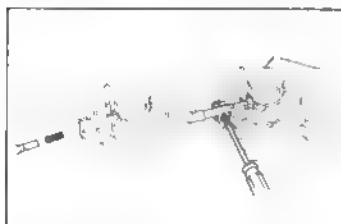
If continuity is not as specified, replace the switch



REPLACEMENT OF COMBINATION SWITCH

1. REPLACE HEADLIGHT DIMMER SWITCH

- (a) Remove the terminals from the connector (See page BE 3)
- (b) Remove the turn signal and hazard warning switch
- (c) Remove the headlight dimmer switch
- (d) Install the headlight dimmer switch
- (e) Insert the spring into the lever and install the lever with the set screw
- (f) Place the ball on the spring, position the lever at HI and install the plate.
- (g) Insure that the switch operates smoothly.
- (h) Install the terminals to the connector (See page BE 3)



2. REPLACE TURN SIGNAL AND HAZARD WARNING SWITCH

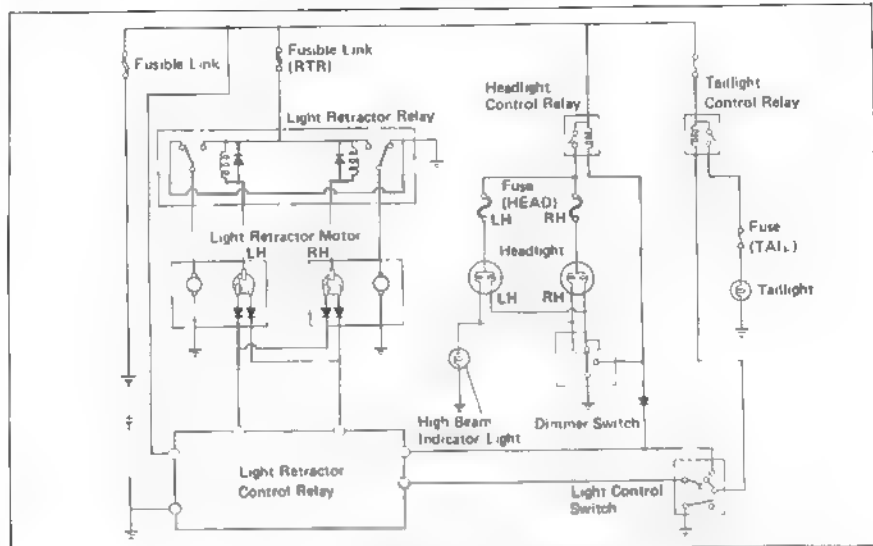
- (a) Remove the terminals from the connector (See page BE 3)
- (b) Remove the turn signal and hazard switch.
- (c) Install the turn signal and hazard switch
- (d) Install the terminals to the connector (See page BE 3)

LIGHTING

Troubleshooting

Problem	Possible cause	Remedy	Page
Only one light does not light	Light bulb burned out Socket, wire or ground faulty	Replace bulb Repair as necessary	
No headlights light	Fusible link blown	Replace fusible link	BE 13
	Headlight control relay faulty	Check relay	BE 12
	Light control switch faulty	Check switch	
	Wiring or ground faulty	Repair as necessary	
High beam headlights or headlight flasher do not operate	Light control switch faulty	Check switch	BE 12
	Wiring faulty	Repair as necessary	
Tail, parking and clearance light do not light	TAIL fuse blown	Replace fuse and check for short	BE 4
	Fusible link blown	Replace fusible link	
	Tailight control relay faulty	Check relay	BE-13
	Light control switch faulty	Check switch	BE 12
	Wiring or ground faulty	Repair as necessary	
Stop lights do not light	STOP fuse blown	Replace fuse and check for short	BE 4
	Stop light switch faulty	Adjust or replace switch	
	Wiring or ground faulty	Repair as necessary	
Stop lights stay on	Stop light switch faulty	Adjust or replace switch	
Instrument lights do not light (tail lights light)	Light control rheostat faulty	Check rheostat	BE 14
	Wiring or ground faulty	Repair as necessary	
Turn signal does not flash on one side	Turn signal switch faulty	Check switch	BE 9
	Wiring or ground faulty	Repair as necessary	
Turn signals do not operate	TURN fuse blown	Replace fuse and check for short	BE 4
	Turn signal flasher faulty	Check flasher	BE 16
	Turn signal/hazard switch faulty	Check switch	BE 9
	Wiring or ground faulty	Repair as necessary	
Hazard warning lights do not operate	HAZ HORN fuse blown	Replace fuse and check for short	BE-4
	Turn signal flasher faulty	Check flasher	BE 16
	Turn signal/hazard switch faulty	Check switch	BE 9
	Wiring or ground faulty	Repair as necessary	

Wiring Diagram

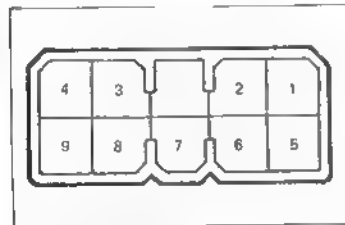


Light Control Switch and Rheostat

INSPECTION OF LIGHT CONTROL SWITCH AND RHEOSTAT

1. INSPECT LIGHT CONTROL SWITCH CONTINUITY

Inspect the switch continuity between terminals



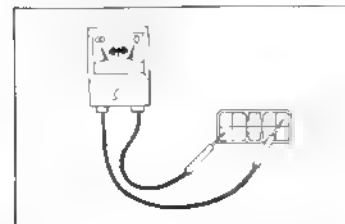
Terminal	9	8	4	7
Switch position	E	T	H	Ho
OFF				
TAIL				
HEAD				
HOLD				

HOLD position and Ho terminal Retractable Light Type
If continuity is not as specified, replace the switch

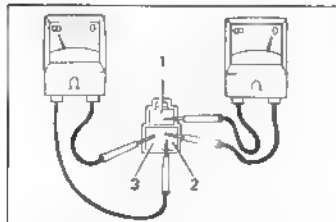
2. CHECK RESISTANCE OF LIGHT CONTROL RHEOSTAT (With Light Control Rheostat only)

Using an ohmmeter, measure the resistance between terminals 1 and 9 at each point while turning the RHEOSTAT knob.

If resistance is not correct, replace the switch



Point	Resistance (Ω)
Full clockwise	0
Midpoint	Approx 5
Full counterclockwise	∞



Light Control Relays (Headlight and Taillight)

INSPECTION OF LIGHT CONTROL RELAY

1. INSPECT RELAY CONTINUITY

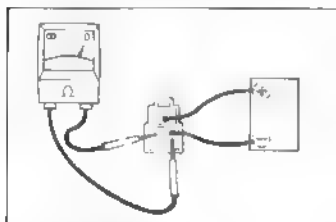
- Check that there is continuity between terminals 1 and 2
- Check that there is no continuity between terminals 2 and 3.

If continuity is not as specified, replace the relay

2. INSPECT RELAY OPERATION

- Apply battery voltage across terminals 1 and 2
- Check that there is continuity between terminals 2 and 3

If operation is not as described, replace the relay



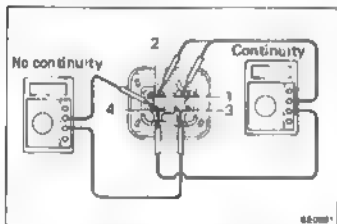
Dimmer Relay

INSPECTION OF DIMMER RELAY

1. INSPECT RELAY CONTINUITY

- Check that there is continuity between terminals 1 and 4
- Check that there is continuity between terminals 2 and 4.
- Check that there is no continuity between terminals 3 and 4.

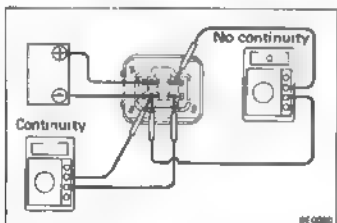
If continuity is not as specified, replace the relay



2. INSPECT RELAY OPERATION

- Apply battery voltage across terminals 2 and 4
- Check that there is no continuity between terminals 1 and 4.
- Check that there is continuity between terminals 3 and 4.

If operation is not as described, replace the relay.



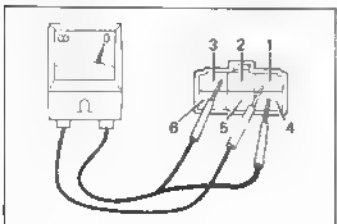
Light Retractor Relay

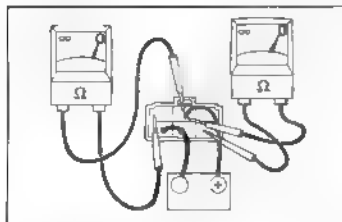
INSPECTION OF LIGHT RETRACTOR RELAY

1. INSPECT RELAY CONTINUITY

- Check that there is continuity between terminals 1 and 3 and also between terminals 1 and 4.
- Check that there is continuity between terminals 2 and 6 and also between terminals 2 and 5.
- Check that there is no continuity between terminals 1 and 2.

If continuity is not as specified, replace the relay

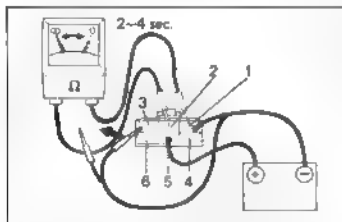




2. INSPECT RELAY OPERATION

- Connect the positive (+) lead from the battery to terminal 2. Connect the negative (-) lead to terminals 5 and 6.
- Check the continuity between terminals 2 and 3 and terminals 2 and 4.

If operation is not as described, replace the relay.



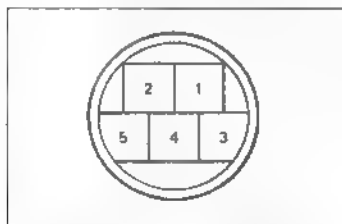
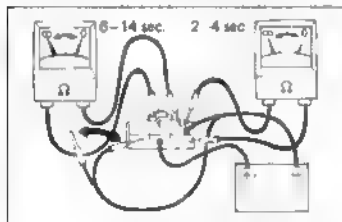
Light Retractor Control Relay

INSPECTION OF LIGHT RETRACTOR CONTROL RELAY

INSPECT RELAY OPERATION

- Connect the positive (+) lead from the battery to terminal 5. Connect the negative (-) lead to terminal 1.
- Connect the negative (-) lead from the battery to terminal 3. After disconnecting the connection between terminal 3 and battery, check the continuity for 2 - 4 seconds between terminals 1 and 2.
- Check the continuity between terminals 1 and 4 after connecting the negative (-) lead from the battery to terminal 6. After disconnecting the connection between terminal 6 and the battery, check that there is continuity for 2 - 4 seconds between terminals 1 and 4, and continuity immediately for 6 - 14 seconds between terminals 1 and 2.

If operation is not as described, replace the relay.



Light Retractor Motor

INSPECTION OF LIGHT RETRACTOR MOTOR

1. INSPECT MOTOR OPERATION

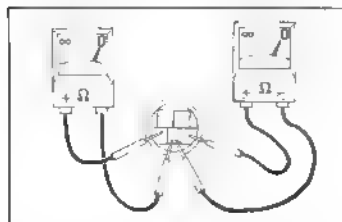
Connect the positive (+) lead from the battery to terminal 2 and connect the negative (-) lead to terminal 1. Check that the motor runs.

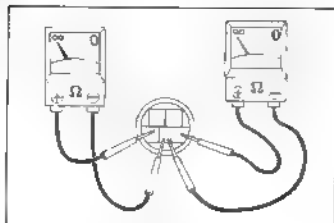
If there is no motor operation, replace the motor.

2. INSPECT DIODE CONTINUITY OF MOTOR

- Move the headlights to any position except the upper most or lowermost positions.
- Connect the ohmmeter positive (+) lead to terminal 4 and the negative (-) lead to terminal 5.
- Connect the ohmmeter positive (+) lead to terminal 4 and the negative (-) lead to terminal 3.

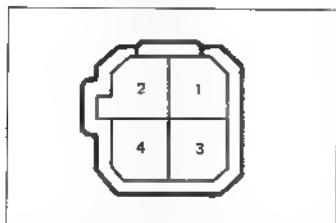
If there is no continuity, replace the motor assembly.





(d) Reverse the test leads of the ohmmeter and inspect continuity.

If there is continuity, replace the motor assembly.



Rear Fog Light Switch

INSPECTION OF REAR FOG LIGHT SWITCH

INSPECT SWITCH CONTINUITY

Inspect the switch continuity between terminals.

Terminal Switch position	2	1	3
ON	○—○—○		
OFF	○—○		○—○

If continuity is not as specified, replace the switch or bulb.

Rear Fog Light Relay

INSPECTION OF REAR FOG LIGHT RELAY

1. INSPECT RELAY CONTINUITY

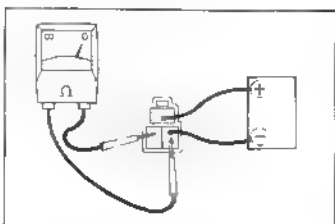
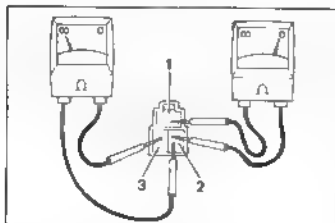
- Check that there is continuity between terminals 1 and 2
- Check that there is no continuity between terminals 2 and 3.

If continuity is not as specified, replace the relay

2. INSPECT RELAY OPERATION

- Apply battery voltage across terminals 1 and 2
- Check that there is continuity between terminals 2 and 3

If operation is not as described, replace the relay



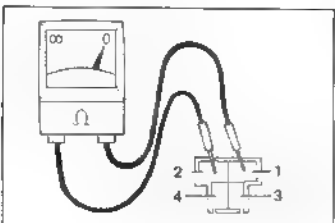
Hazard Red Indicator Light Relay

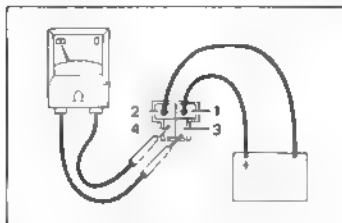
INSPECTION OF RED INDICATOR LIGHT RELAY

1. INSPECT RELAY CONTINUITY

- Check that there is continuity between terminals 1 and 2
- Check that there is continuity between terminals 3 and 4.
- Check that there is no continuity between terminals 1 and 3.

If continuity is not as specified, replace the relay

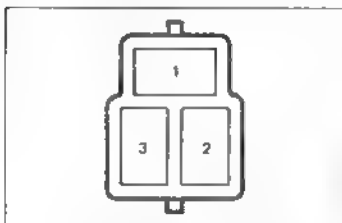




2. INSPECT RELAY OPERATION

- Apply battery voltage across terminals 1 and 2
- Check that there is no continuity between terminals 3 and 4.
- Check that there is no continuity between terminals 1 and 3.

If operation is not as described, replace the relay



Turn Signal Flasher

INSPECTION OF TURN SIGNAL FLASHER

INSPECT RELAY OPERATION

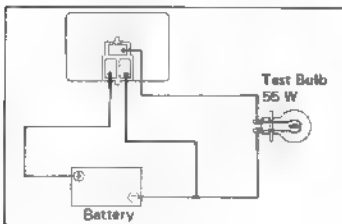
- Connect the positive (+) lead from the battery to terminal 3. Connect the negative (-) lead to terminal 2.
- Connect a 55W bulb between terminals 1 and 2, and check that the bulb goes on and off

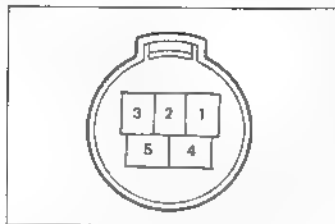
NOTE: The turn signal lights should flash 75 to 95 times per minute.

If one of the front or rear turn signal lights has an open circuit, the number of flashes would be more than 120 per minute.

If one of the side turn signal lights has an open circuit, the number of flashes would increase by about 10 per minute.

If operation is not as described, replace the relay





HEADLIGHT CLEANER

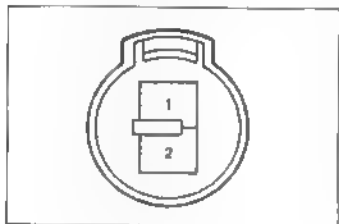
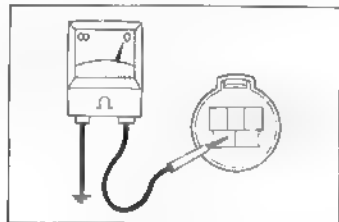
Headlight Cleaner Control Relay

INSPECTION OF HEADLIGHT CLEANER CONTROL RELAY

INSPECT RELAY OPERATION

- Check that there is continuity between terminal 2 and body ground with the washer switch "ON".
- Check that there is battery voltage between terminal 3 and body ground with the light control switch at "TAIL" or "HEAD".
- Check that there is continuity between terminal 5 and body ground for about 0.5 seconds when the light control switch is at "TAIL" or "HEAD" and the washer switch is pushed twice in succession.

If operation is not as described, replace the relay



Cleaner Motor

INSPECTION OF CLEANER MOTOR

INSPECT MOTOR OPERATION

- Connect the positive (+) lead from the battery to terminal 1. Connect the negative (-) lead to terminal 2.
- Check that the motor operates.

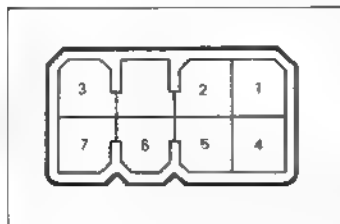
CAUTION: These tests must be performed quickly (within 3 — 5 seconds) to prevent the coil from burning out.

If operation is not as described, replace the motor

WIPER AND WASHER

Troubleshooting

Problem	Possible cause	Remedy	Front	Rear
			Page	Page
Wipers do not operate or return to off position	WIPER fuse blown	Replace fuse and check for short	BE-4	BE-4
	Wiper motor faulty	Check motor	BE-19	BE-20
	Wiper control switch faulty	Check switch	BE-18	BE-20
	Wiring or ground faulty	Repair as necessary		
Wipers do not operate in INT position	Wiper control relay faulty	Check switch	BE-18	/
	Wiper control switch faulty	Check switch	BE-18	
	Wiper motor faulty	Check motor	BE-19	
	Wiring or ground faulty	Repair as necessary		
Washer does not operate	Washer hose or nozzle clogged	Repair as necessary		
	Washer motor faulty	Replace motor	BE-19	BE-20
	Wiper control switch faulty	Check switch	BE-18	BE-20
	Wiring faulty	Repair as necessary		



Front Wiper and Washer Switch

INSPECTION OF FRONT WIPER AND WASHER SWITCH

1. INSPECT SWITCH CONTINUITY

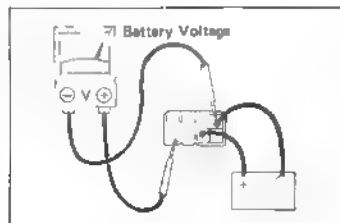
Terminal	5 +B	4 +2	7 +1	2 +S	1 EW	3 W
Switch position						
OFF						
INT						
LO						
HI						
Washer						
OFF						
ON						

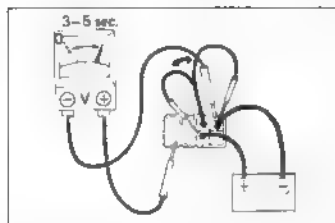
INT position: With INT

If continuity is not as specified, replace the switch

2. INSPECT SWITCH OPERATION (INT type only)

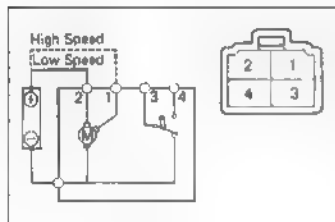
- Connect the positive (+) lead from the battery to terminal 5 and connect the negative (-) lead from the battery to terminal 1.
- Connect the positive (+) lead from the voltmeter to terminal 7 and connect the negative (-) lead from the voltmeter to terminal 1. Turn the wiper switch to INT position and check that the meter needle indicates battery voltage.





- (c) After first connecting the +S probe to terminal 1, connect it to terminal 5. Then, immediately connect it to terminal 1 again, and check that the tester needle indicates 0 volts for 3 — 5 seconds before returning to its original position.

If operation is not as described, replace the switch.



Front Wiper Motor

INSPECTION OF FRONT WIPER MOTOR

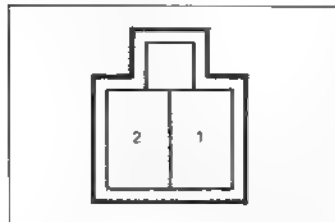
INSPECT FRONT WIPER MOTOR OPERATION

Disconnect the wiper motor.

Connect the negative (—) lead from the battery to the motor body and inspect the following operation.

- Connect the positive (+) lead to terminal 2 and check that the motor turns at low speed.
- Connect the positive (+) lead to terminal 1 and check that the motor turns at high speed

If operation is not as described above, replace the motor



Washer Valve

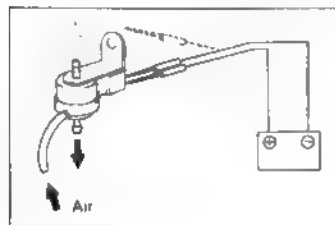
INSPECTION OF WASHER VALVE

1. INSPECT VALVE CONTINUITY

Check that there is continuity between the terminals

2. INSPECT VALVE OPERATION

- Check that air flows from the washer tank to the front washer hose and that air does not flow from the washer tank to the rear washer hose.



- Connect the positive (+) lead from the battery to terminal 2 and connect the negative (—) lead to terminal 1. Check that air flows from the washer tank to the rear washer hose and that air does not flow from the washer tank to the front washer hose

If operation is not as described, replace the valve



Rear Wiper and Washer Switch

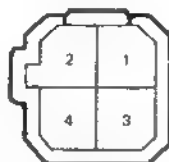
INSPECTION OF REAR WIPER AND WASHER SWITCH

INSPECT SWITCH CONTINUITY

Inspect the continuity between terminals for each switch position shown in the table below

If there is no continuity between the terminals specified, replace the switch.

Switch position \ Terminal	1	2	6	3	4	5
OFF						
ON						
Washer I						
Washer II						



Rear Wiper Motor

INSPECTION OF REAR WIPER MOTOR

INSPECT REAR WIPER MOTOR OPERATION

Connect the negative (-) lead from the battery to the motor body. Connect a positive (+) lead to terminal 3 and check that the motor turns.

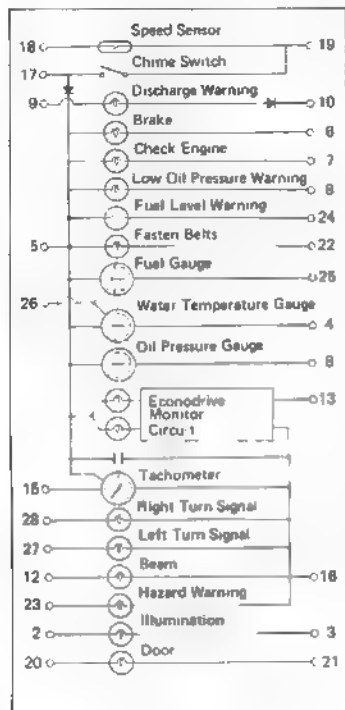
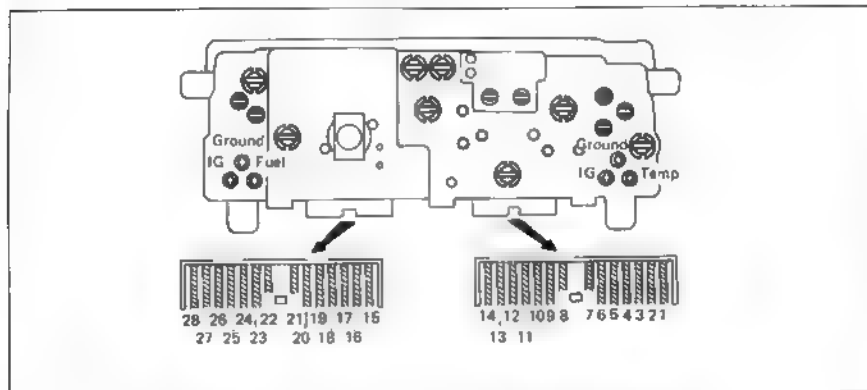
If operation is not as described above, replace the motor.

INSTRUMENTS AND SENDER GAUGES

Troubleshooting

Problem	Possible cause	Remedy	Page
Tachometer does not work	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Tachometer faulty	Check tachometer	BE 24
	Wiring faulty	Repair as necessary	
Fuel receiver gauge does not work	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Fuel receiver gauge faulty	Check receiver gauge	BE 25
	Sender gauge faulty	Check sender gauge	BE 25
	Wiring or ground faulty	Repair as necessary	
Water temperature receiver gauge does not work	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Water temperature receiver gauge faulty	Check receiver gauge	BE 26
	Water temperature sender gauge faulty	Check sender gauge	BE 26
	Wiring or ground faulty	Repair as necessary	
Oil pressure receiver gauge does not work	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Oil pressure receiver gauge faulty	Check receiver gauge	BE 27
	Oil pressure sender gauge faulty	Check sender gauge	BE 27
	Wiring or ground faulty	Repair as necessary	
Brake warning light does not light	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Bulb burned out	Replace bulb	
	Brake fluid level warning switch faulty	Check switch	BE 28
	Wiring or ground faulty	Repair as necessary	
Parking brake warning light does not light (Australia only)	GAUGE fuse blown	Replace fuse and check for short	BE 4
	Bulb burned out	Replace bulb	
	Parking brake switch faulty	Check switch	
	Wiring or ground faulty	Repair as necessary	
Discharge warning light does not light	IGN fuse blown	Replace fuse and check for short	BE 4
	Bulb burned out	Replace bulb	
	Wiring faulty	Repair as necessary	

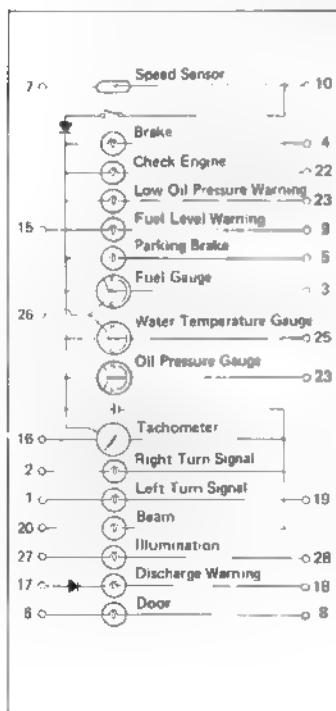
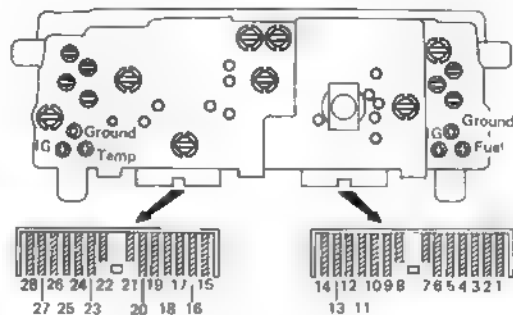
Combination Meter and Gauges (LHD)



COMBINATION METER CIRCUIT

No.	Wiring Connector Sides
1	—
2	TAIL Fuse
3	Rheostat or Ground
4	Water Temperature Sender Gauge
5	GAUGE Fuse
6	Brake Fluid Level Warning Switch and Parking Brake Switch
7	EFI Computer (With EFI)
8	Oil Pressure Sender Gauge or Oil Pressure Switch
9	IGN Fuse
10	CHARGE Fuse
11	—
12	Dimmer Switch Terminal H _U
13	Vacuum Switch
14	—
15	Ignition Coil
16	Ground
17	Chime
18	EFI Computer (With EFI)
19	Ground
20	DOME Fuse
21	Door
22	Seat Belt Warning
23	Hazard Warning
24	Fuel Level Warning
25	Fuel Sender Gauge
26	Ground
27	Turn Signal Switch Terminal T _L
28	Turn Signal Switch Terminal T _R

Combination Meter and Gauges (RHD)



COMBINATION METER CIRCUIT

No	Wiring Connector Sides
1	Turn Signal Switch Terminal T _L
2	Turn Signal Switch Terminal T _R
3	Fuel Sender Gauge
4	Brake Fluid Level Warning Switch and Parking Brake Switch (except Australia), or Brake Fluid Level Warning Switch and Bulb Check Relay (Australia only)
5	Parking Brake Switch (Australia only)
6	DOME Fuse
7	EFI Computer (With EFI)
8	—
9	Fuel Level Warning
10	Ground
11	—
12	—
13	—
14	—
15	GAUGE Fuse
16	Ignition Coil
17	IGN Fuse
18	CHARGE Fuse
19	Ground
20	Dimmer Switch Terminal H _U
21	—
22	EFI Computer (With EFI)
23	Oil Pressure Sender Gauge or Oil Pressure Switch
24	—
25	Water Temperature Sender Gauge
26	Ground
27	TAIL Fuse
28	Rheostat or Ground

Speedometer

ON-VEHICLE INSPECTION OF SPEEDOMETER

- (a) Using a speedometer tester, inspect the speedometer for allowable indicating error and check the operation of the odometer.

NOTE Tire wear and tire over or under inflation will increase the indicating error.

- (b) Check the speedometer for pointer vibration and abnormal noises.

NOTE: Pointer vibration can be caused by a loose speedometer cable.

Standard indication (km/h)	Allowable error (km/h)
20	21 - 25
40	41.5 - 48
60	62.5 - 67
80	83 - 88
100	104 - 108
120	125 - 130.5
140	145.5 - 151.5
160	166 - 173

Standard indication (mph)	Allowable error (mph)
20	21 - 23.5
40	41.5 - 44
60	62.5 - 66
80	83 - 87
100	104 - 108.5

Tachometer

ON-VEHICLE INSPECTION OF TACHOMETER

- (a) Connect a tune-up test tachometer and start the engine.
- (b) Compare the tester and tachometer indications.

If the error is excessive, replace the tachometer.

CAUTION:

- Reversing the connection of the tachometer will damage the transistors and diodes inside.
- When removing or installing the tachometer, be careful not to drop or subject it to severe shocks.

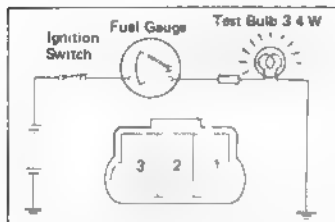
Temp. \ rpm	1000	3000	5000	7000
25°C DC13V	±100	±200	±200	±300

Fuel Gauge

INSPECTION OF FUEL GAUGE

1. INSPECT RECEIVER GAUGE OPERATION

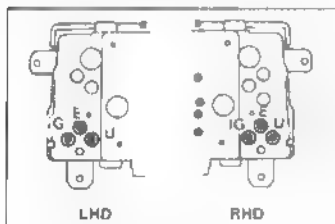
- (a) Disconnect the connector from the fuel sender gauge. Turn the ignition switch on and check that the receiver gauge needle moves to empty position.



- (b) Connect the 3.4W test bulb between terminal 1 and body ground. Check that the bulb light and the receiver gauge needle operates.

NOTE: Because of the silicon oil in the gauge, it will take about 90 seconds for the needle to stabilize.

If indications are not correct, remove and test the receiver gauge.



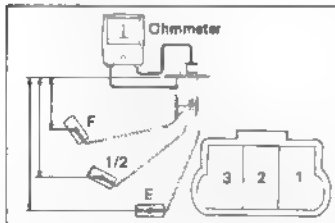
2. MEASURE RECEIVER GAUGE RESISTANCE BETWEEN TERMINALS

Between terminals	Resistance (Ω)
IG - U	Approx. 102
U - E	Approx. 101
IG - E	Approx. 203

If each resistance value is not as shown in the table above, replace the receiver gauge.

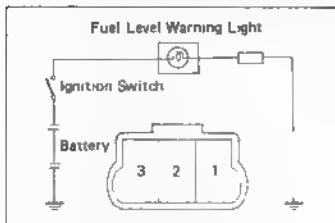
3. MEASURE RESISTANCE OF SENDER GAUGE

- (a) Check that resistance changes as the float is moved from the top to bottom position.
- (b) Measure the resistance between terminal 1 and the sender gauge body for each float position.



	Float position	mm (in.)	Resistance (Ω)
F	64.7 - 70.7	(2.547 - 2.783)	3 ± 2.1
1/2	153	(6.024)	32.5 ± 4.8
E	205.5 - 211.5	(8.091 - 8.327)	110 ± 7.7

If each resistance value is not as shown in the table above, replace the sender gauge.



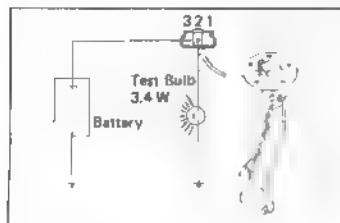
Fuel Level Warning

INSPECTION OF FUEL LEVEL WARNING

1. INSPECT WARNING LIGHT OPERATION

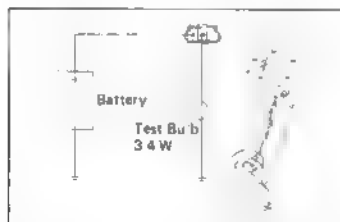
- (a) Disconnect the connector from the switch. Connect the switch terminal 1 and body ground.
- (b) Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.



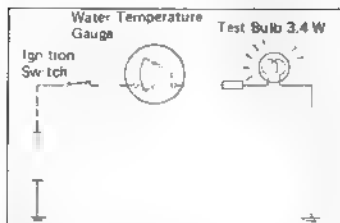
2. INSPECT LEVEL WARNING SWITCH OPERATION

- (a) Apply battery voltage between terminals 2 and 3 through a 3.4 W bulb. Check that the bulb lights.



- (b) Submerge the switch in gasoline or water. Check that the bulb goes out.

If operation is not correct, replace the sender gauge.



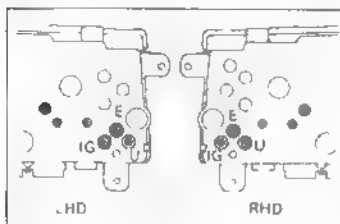
Water Temperature Gauge

INSPECTION OF WATER TEMPERATURE GAUGE

1. INSPECT RECEIVER GAUGE OPERATION

- (a) Disconnect the connector from the sender gauge. Ground the terminal through a 3.4 W bulb as shown.
- (b) Turn the ignition switch on. Check that the bulb lights up and that the receiver gauge needle rises to the upper position.

If indications are not correct, remove and test the receiver



2. MEASURE RESISTANCE OF RECEIVER GAUGE

Using an ohmmeter, measure the resistance between terminals.

If each resistance value is not as shown in the table below, replace the receiver gauge.

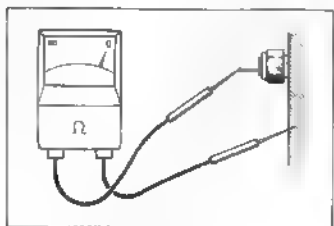
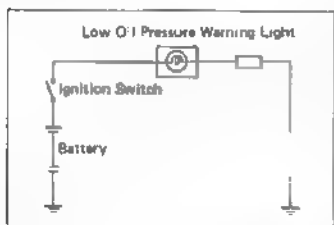
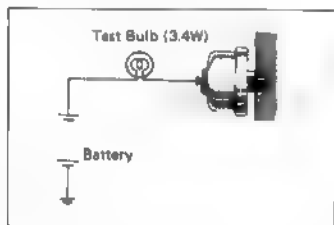
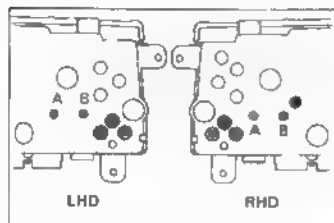
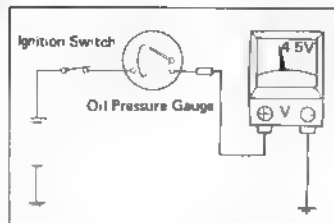
Between terminals	Resistance (Ω)
IG - U	Approx. 99
U - E	Approx. 156
IG - E	Approx. 255

3. MEASURE RESISTANCE OF SENDER GAUGE

Using an ohmmeter, measure the resistance between the terminal and ground.

If each resistance value is not as shown in the table below, replace the sender gauge.

Water temperature ($^{\circ}\text{C}$ ($^{\circ}\text{F}$))	Resistance (Ω)
50 (122)	226 \pm 33.8 -36.6
115 (239)	26.4 \pm 1.71 -2.21



Oil Pressure Gauge

INSPECTION OF OIL PRESSURE GAUGE

1. INSPECT RECEIVER GAUGE OPERATION

- Disconnect the connector from the sender gauge. Connect the positive (+) lead from the voltmeter to the terminal and the negative (-) lead to body ground.
- Turn the ignition switch on. Check that the meter needle vibrates near the 4.5V position. If the voltage value is not correct, remove and test the receiver gauge.

2. MEASURE RESISTANCE OF RECEIVER GAUGE

Using an ohmmeter, measure the resistance between terminals A and B.

Resistance: Approx. 42 Ω

If resistance value is not correct, replace the receiver gauge.

3. INSPECT SENDER GAUGE OPERATION

- Disconnect the connector from the sender gauge.
- Connect a 12V battery to the sender gauge terminal in series with a 3.4W bulb. Check that the bulb does not light when the engine is stopped, and flashes when the engine is running. The number of flashes should vary with engine speed.

If operation is not correct, replace the sender gauge.

Low Oil Pressure Warning

INSPECTION OF LOW OIL PRESSURE WARNING

1. INSPECT WARNING LIGHT OPERATION

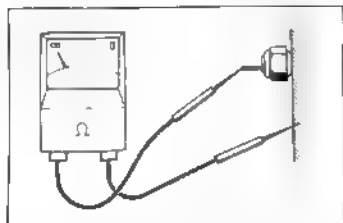
- Disconnect the connector from the switch. Connect the switch terminal and body ground.
- Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.

2. INSPECT SWITCH OPERATION

Check the continuity between the terminal and ground.

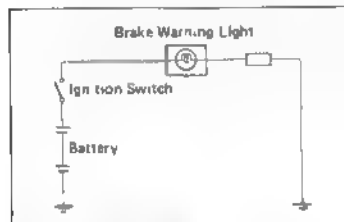
- Check that there is continuity with the engine stopped.



- (b) Check that there is no continuity with the engine running.

NOTE After the engine has started, oil pressure should rise over 0.4 kg/cm^2 (5.7 psi)

If operation is not correct, replace the switch



Brake Warning

INSPECTION OF BRAKE WARNING

1. INSPECT WARNING LIGHT OPERATION

- (a) Disconnect the connector from the brake fluid level warning switch. Connect the switch terminal and body ground.

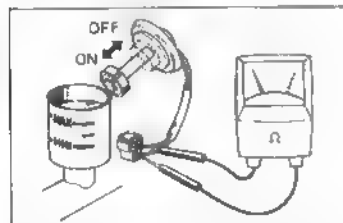
- (b) Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb

2. INSPECT OPERATION OF BRAKE FLUID LEVEL WARNING SWITCH

Inspect the switch operation when the switch is OFF (float up) and when the switch is ON (float down)

If operation is not correct, replace the switch.



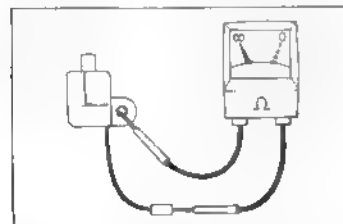
3. INSPECT OPERATION OF PARKING BRAKE SWITCH (except Australia)

Using an ohmmeter, inspect the continuity between the terminal and bolt hole (ground)

- (a) Check that there is continuity when the switch is free (parking brake lever up)

- (b) Check that there is no continuity when the switch pin is pushed (parking brake lever down).

If operation is not correct, replace the switch.



Bulb Check Relay (Australia only)

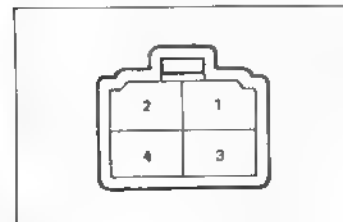
INSPECTION OF BULB CHECK RELAY

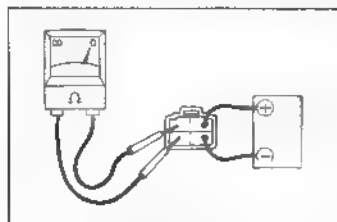
1. INSPECT RELAY CONTINUITY

- (a) Check that there is continuity between terminals 1 and 3

- (b) Check that there is no continuity between terminals 2 and 4.

If continuity is not as specified, replace the relay





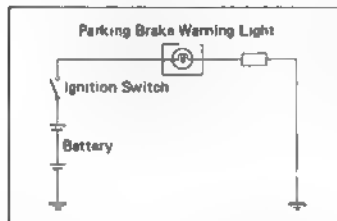
2. INSPECT RELAY OPERATION

Connect the positive (+) lead from the battery to terminal 1 and connect the negative (-) lead from the battery to terminal 3. Then, check that there is continuity between terminals 2 and 4.

If operation is not correct, replace the relay.

Parking Brake Warning (Australia only)

INSPECTION OF PARKING BRAKE WARNING

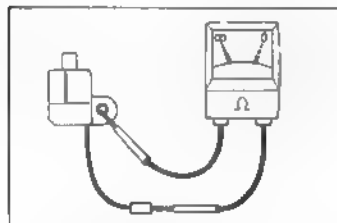


1. INSPECT WARNING LIGHT OPERATION

(a) Disconnect the connector from the parking brake switch. Connect the switch terminal and body ground.

(b) Turn the ignition switch on. Check that the bulb lights.

If operation is not correct, remove and test the bulb.



2. INSPECT OPERATION OF PARKING BRAKE SWITCH

Using an ohmmeter, inspect the continuity between the terminal and bolt hole.

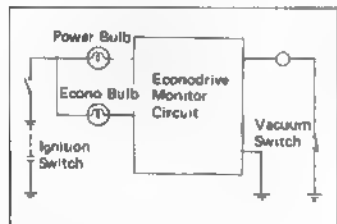
(a) Check that there is continuity when the switch is free (parking brake lever up).

(b) Check that there is no continuity when the switch pin is pushed (parking brake lever down).

If operation is not correct, remove and test the bulb.

Econodrive Monitor

INSPECTION OF ECONODRIVE MONITOR



1. INSPECT INDICATOR LIGHT OPERATION

(a) Turn the ignition switch on. Check that the POWER bulb lights.

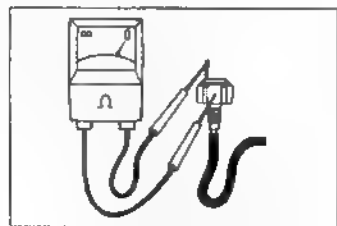
(b) Disconnect the connector from the switch. Check that the ECONO bulb lights.

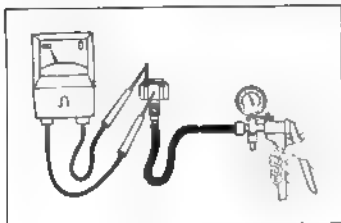
If operation is not correct, remove and test the bulb.

2. INSPECT SWITCH CONTINUITY

Check that there is continuity between the switch terminal and body.

If continuity is not as specified, replace the switch.





3. INSPECT SWITCH OPERATION

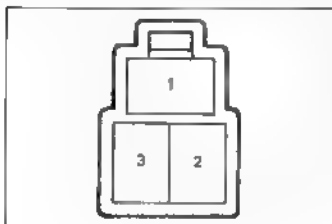
With a vacuum of 100 ± 25 mmHg (3.94 ± 0.98 in.Hg) or above, check that there is no continuity between the switch terminal and body

If operation is not correct, replace the switch

REAR WINDOW DEFOGGER

Troubleshooting

Problem	Possible cause	Remedy	Page
Rear window defogger does not work	Circuit breaker OFF Defogger relay faulty Defogger switch faulty Defogger wire broken Wiring and ground faulty	Reset breaker and check for short Check relay Check switch Check wires Repair as necessary	BE-4 BE-31 BE-31 BE-32



Rear Window Defogger Switch

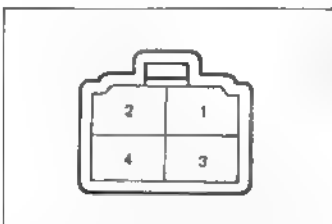
INSPECTION OF REAR WINDOW DEFOGGER SWITCH

INSPECT SWITCH CONTINUITY

Inspect continuity between the terminals.

Terminal	1	3	2
Switch position			
OFF		○	○
ON		○	○

If there is no continuity as shown above, replace the switch or bulb.



Rear Window Defogger Relay

INSPECTION OF REAR WINDOW DEFOGGER RELAY

1. INSPECT RELAY CONTINUITY

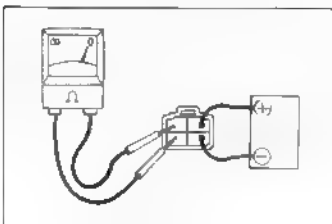
- Check that there is continuity between terminals 1 and 3.
- Check that there is no continuity between terminals 2 and 4.

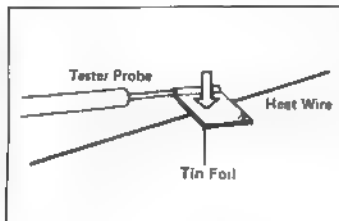
If continuity is not as specified, replace the relay

2. INSPECT RELAY OPERATION

Connect the positive (+) lead from the battery to terminal 1 and connect the negative (-) lead from the battery to terminal 3. Then, check that there is continuity between terminals 2 and 4.

If operation is not as described, replace the relay

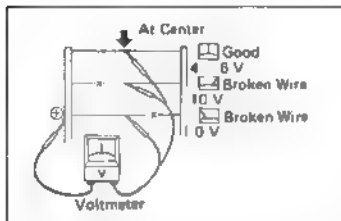




Rear Window Defogger Wires

CAUTION:

- When cleaning the glass, use a soft, dry cloth, and wipe the glass in the direction of the wire. Take care not to damage the wires.
- Do not use detergents or glass cleaners with abrasive ingredients.
- When measuring voltage, wind a piece of tin foil around the tip of the negative probe and press the foil against the wire with your finger, as shown.



INSPECTION OF REAR WINDOW DEFOGGER WIRES

1. INSPECT FOR WIRE BREAKAGE

- Turn the defogger switch on.
- Inspect the voltage at the center of each heat wire.

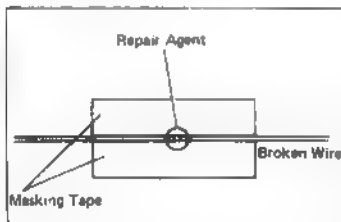
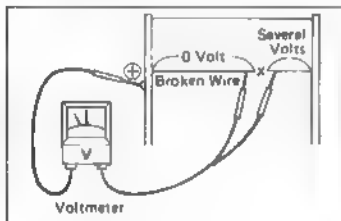
Voltage	Criteria
Approx. 5V	Good (No break in wire)
Approx. 10V or 0V	Broken wire

NOTE: If there is 10V, the wire is broken between the center of the wire and positive (+) end. If there is no voltage, the wire is broken between the center of the wire and ground.

2. INSPECT FOR WIRE BREAKAGE POINT

- Place the voltmeter positive (+) lead against the defogger positive (+) terminal.
- Place the voltmeter negative (−) lead with the foil strip against the heat wire at the positive (+) terminal end and shift it toward the negative (−) terminal end.
- The point where the voltmeter deflects from zero to several volts is the place where the heat wire is broken.

NOTE: If the heat wire is not broken, the voltmeter will indicate 0V at the positive (+) end of the heat wire but gradually increase to 12V as the meter probe is moved to the other end.

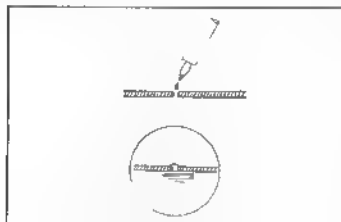


REPAIR OF REAR WINDOW DEFOGGER WIRES

1. CLEAN BROKEN WIRE WITH WHITE GASOLINE

2. PLACE MASKING TAPE ALONG BOTH SIDES OF WIRE TO BE REPAIRED

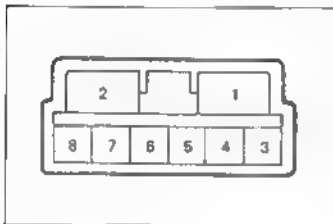
- Thoroughly mix the repair agent (DuPont paste No. 4817).
- Using a fine tip brush, apply a small amount to the wire.
- After a couple of minutes, remove the masking tape.
- Allow to stand at least 24 hours.



HEATER

Troubleshooting

Problem	Possible cause	Remedy	Page
Blower does not work when fan switch is on	Circuit breaker OFF	Reset breaker and check for short	BE-4
	Heater main relay faulty	Check relay	BE-33
	Heater blower switch faulty	Check switch	BE-33
	Heater blower resistor faulty	Check resistor	BE-34
	Heater blower motor faulty	Replace motor	
	Wiring or ground faulty	Repair as necessary	
Incorrect temperature output	Control cables broken or binding	Check cables	BE-34
	Heater hoses leaking or clogged	Replace hose	
	Water valve faulty	Replace valve	
	Air dampers broken	Repair dampers	
	Air ducts clogged	Repair ducts	
	Heater radiator leaking or clogged	Replace radiator	
	Heater control unit faulty	Repair control unit	



Heater Switch

INSPECTION OF HEATER BLOWER SWITCH

INSPECT SWITCH CONTINUITY

Inspect heater blower switch continuity.

Terminal Switch position	2	3	5	6	1	7	8
OFF							
LO		○					○
•	○	○	○				○
•	○	○	○	○			○
HI	○	○	○	○	○		○

• For illumination light

If continuity is not as specified, replace the switch.

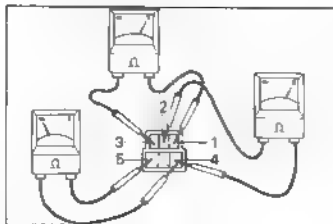
Heater Relay

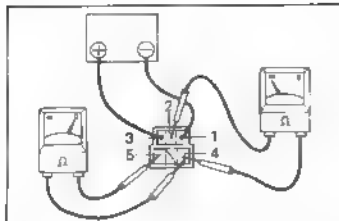
INSPECTION OF HEATER RELAY

1 INSPECT RELAY CONTINUITY

- Check that there is continuity between terminals 1 and 3
- Check that there is continuity between terminals 2 and 4
- Check that there is no continuity between terminals 4 and 5.

If continuity is not as specified, replace the relay

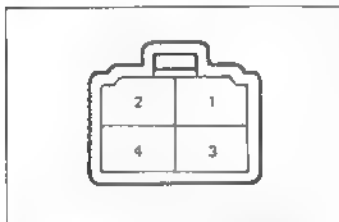




2. INSPECT RELAY OPERATION

- Apply battery voltage across terminals 1 and 3.
- Check that there is continuity between terminals 4 and 5.
- Check that there is no continuity between terminals 2 and 4.

If operation is not as described, replace the relay



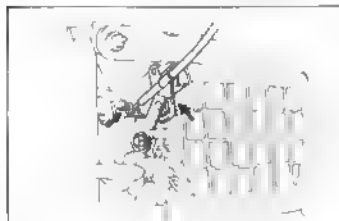
Heater Blower Resistor

INSPECTION OF HEATER BLOWER RESISTOR

INSPECT RESISTOR CONTINUITY

Check that there is continuity between terminals 1 and 3.

If there is no continuity, replace the resistor.

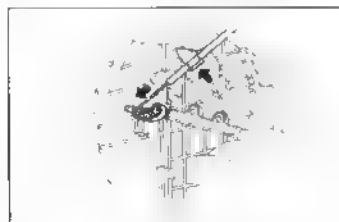


Heater Control

ADJUSTMENT OF HEATER CONTROL

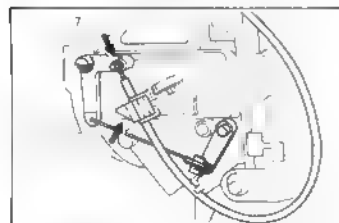
SET AIR INLET DAMPER

Set the air inlet damper and control lever to "Fresh Air"



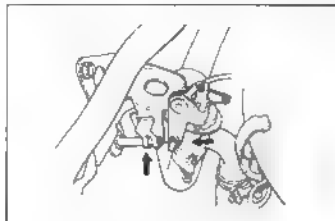
SET MODE SELECTOR DAMPER

Set the mode selector damper and control lever to "Vent".



SET AIR MIX DAMPER

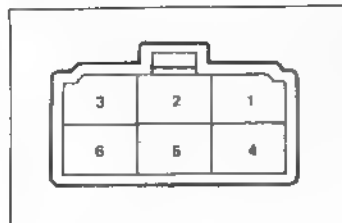
Set the air mix damper and control lever to "Cool"

**SET WATER VALVE**

Set the water valve and control lever to "Cool".

TEST CONTROL CABLE OPERATION

Move the control levers back and forth and check for stiffness and binding through full range of the levers.



SUN ROOF

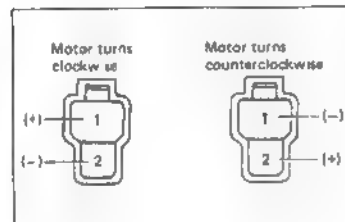
Sun Roof Switch

INSPECTION OF SUN ROOF SWITCH

INSPECT SWITCH CONTINUITY

Terminal Switch position	3	1	4	5
OPEN				
OFF				
CLOSE				

If continuity is not as specified, replace the switch.



Sun Roof Motor

INSPECTION OF SUN ROOF MOTOR

INSPECT MOTOR OPERATION

Apply 12V to both terminals of the connector and check that the motor runs.

Then, reverse the polarity, and check that the motor revolution is reversed.

If there is no motor operation, replace the motor

RADIO, STEREO TAPE PLAYER AND ANTENNA

Troubleshooting

DESCRIPTION OF SYMBOLS



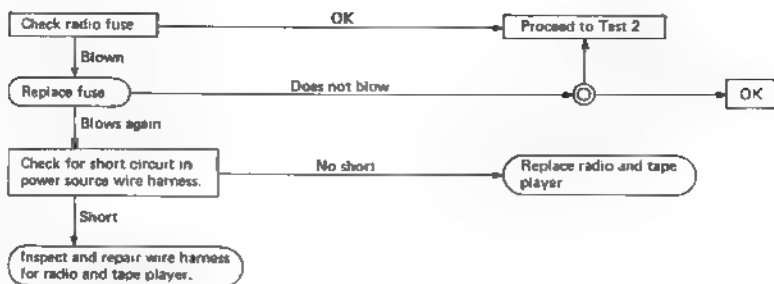
1. DEAD RADIO AND TAPE PLAYER

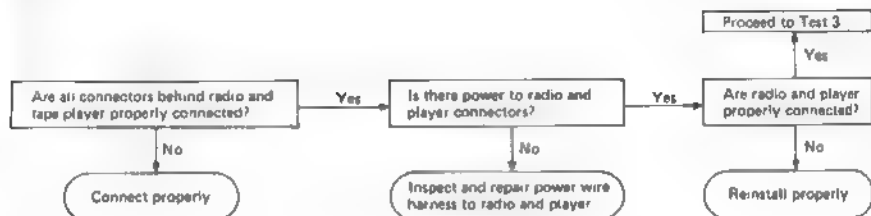
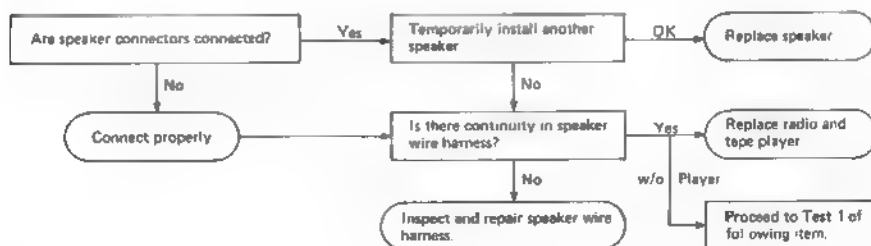
- (a) No power to radio or tape player, or power but no sound

Possible causes.

- Blown radio fuse
- Short circuit or broken wire in power source wire harness
- Loose connectors behind radio and tape player
- Loose speaker connector
- Defective speaker
- Broken wire in speaker wire harness
- Improperly installed radio or tape player
- Defective radio or tape player

TEST 1



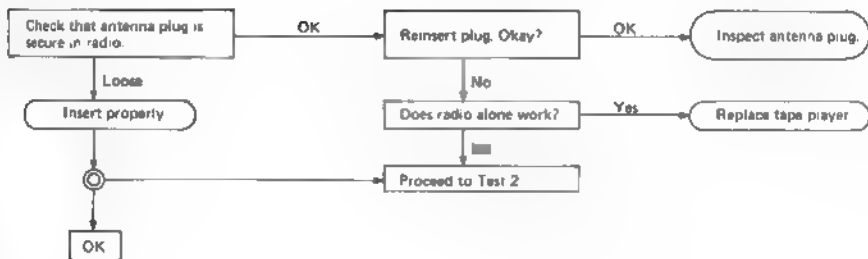
TEST 2**TEST 3**

(b) Tape player okay but no sound from AM and/or FM

Possible causes:

- Antenna disconnected
- Antenna plug not properly connected
- Defective antenna
- Defective radio or tape player
- Blown RADIO fuse

TEST 1



TEST 2

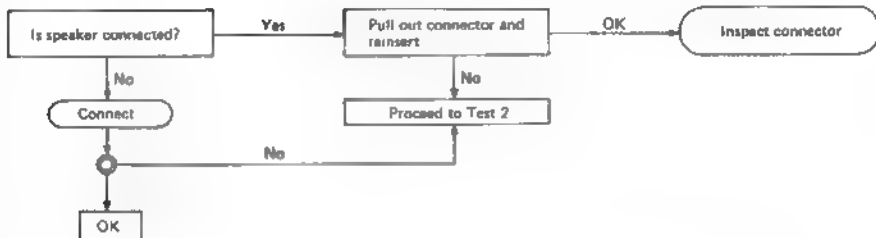


(c) No sound from one speaker.

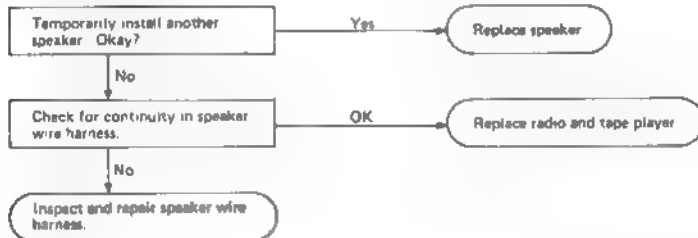
Possible causes.

- Loose speaker connector
- Broken wire in speaker wire harness
- Defective speaker
- Defective radio and tape player

TEST 1



TEST 2

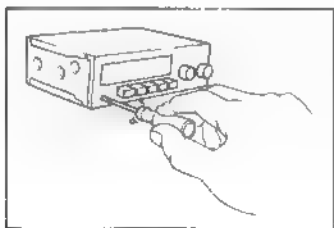
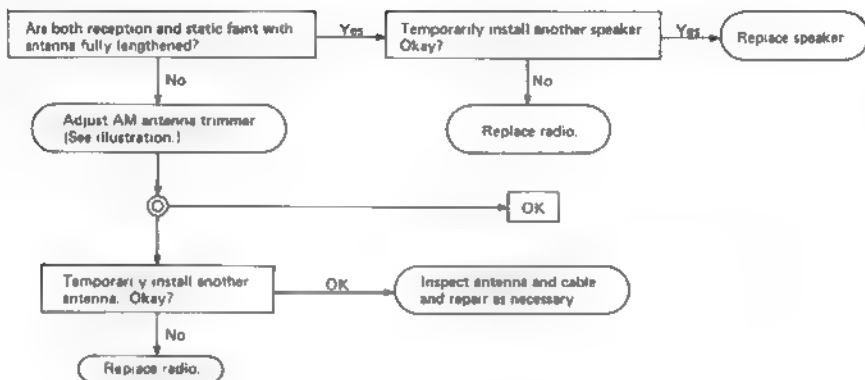


2. FAINT RECEPTION

Possible causes

- Incorrectly adjusted antenna trimmer
- Defective antenna cable
- Defective speaker
- Defective radio

TEST



NOTE Adjustment of antenna trimmer.

- (1) Fully lengthen the antenna.
- (2) With volume and tone at maximum, turn the dial to around 1400 kHz where there is no reception.
- (3) Adjust the trimmer to where static is loudest.

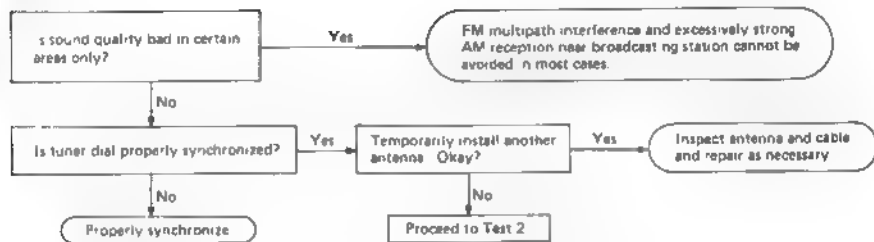
3. BAD SOUND QUALITY

(a) Sound quality bad when radio played

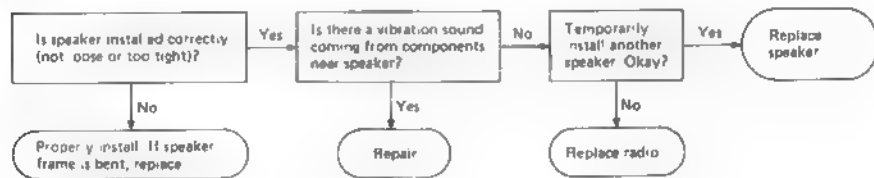
Possible causes:

- Multipath interference or excessive interception
- Tuner dial not synchronized with station
- Defective antenna and cable
- Speaker improperly installed
- Vibration sound from components near speaker
- Defective speaker
- Defective radio

TEST 1



TEST 2

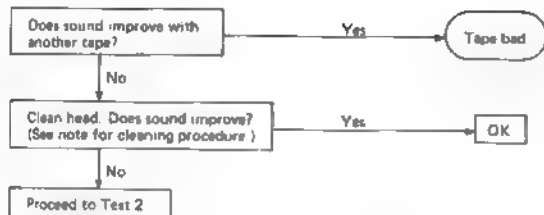


(b) Sound quality bad when tape player played.

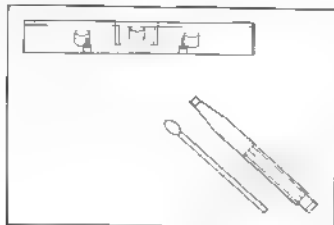
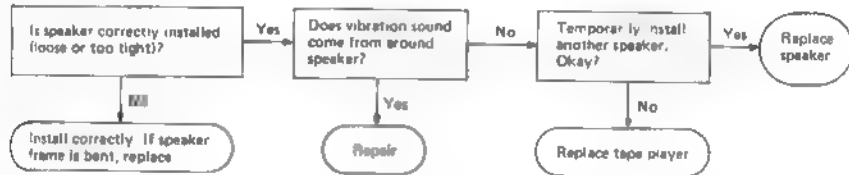
Possible causes:

- Bad tape
- Dirty head
- Incorrectly installed speaker
- Vibration noise from around speaker
- Defective speaker
- Defective tape player

TEST 1



TEST 2



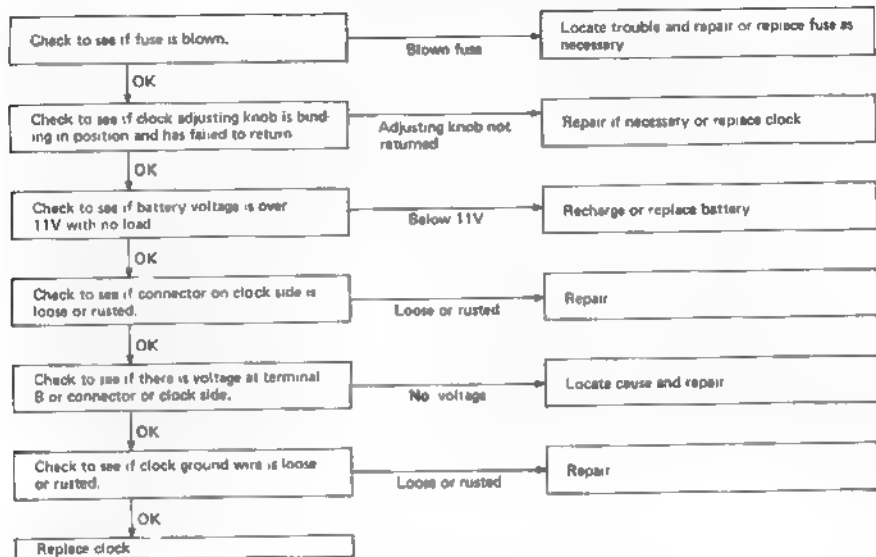
NOTE: Head cleaning procedure.

- (1) Raise the cassette door with your finger. Next, using a pencil or like object, push in the guide.
- (2) Using a cleaning pen or cotton applicator soaked in alcohol, clean the head surface, pinch rollers and capstans.
- (3) Push in the eject button

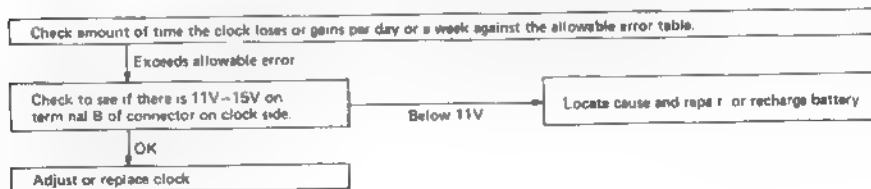
CLOCK

Troubleshooting

CLOCK WILL NOT OPERATE



CLOCK LOSES OR GAINS TIME



1. INSPECT ALLOWABLE ERROR OF CLOCK

Type	Allowable Error (per day)
3-hand quartz	± 4.0 seconds
Digital quartz	± 2.5 seconds

2. ADJUSTMENT OF CLOCK

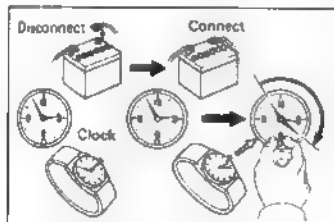
Adjustment of the quartz clock requires a precise digital counter. Adjustment must be made in a shop specified by the manufacturer.

3. STARTING OF CLOCK

(a) Connect the battery terminal

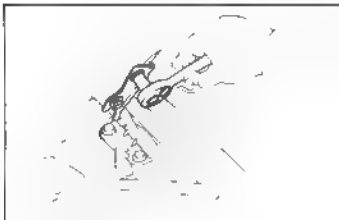
(b) Check the clock to see that it is running, and then set it to the correct time.

NOTE: Whenever the battery terminal is disconnected, make sure to set the clock to the correct time after reconnecting it.



BODY

	Page
HOOD	BO-2
FRONT DOOR	BO-3
LUGGAGE COMPARTMENT LID AND BACK DOOR	BO-12
MOULDING	BO-14
WINDSHIELD	BO-24
QUARTER WINDOW GLASS	BO-30
BACK DOOR GLASS	BO-34
REAR WINDOW GLASS	BO-38
SUN ROOF	BO-40
SAFETY PAD	BO-46
FUEL TANK AND LINE	BO-50
BODY DIMENSIONS	BO-51

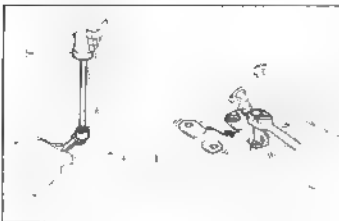


HOOD

ADJUSTMENT OF HOOD

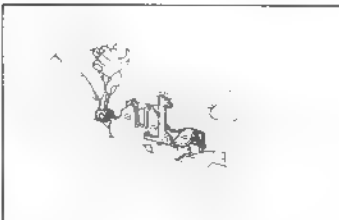
1. **ADJUST HOOD IN FORWARD/REARWARD AND LEFT/RIGHT DIRECTIONS**

Loosen the hood side hinge bolts to adjust.



2. **ADJUST FRONT EDGE OF HOOD IN VERTICAL DIRECTION**

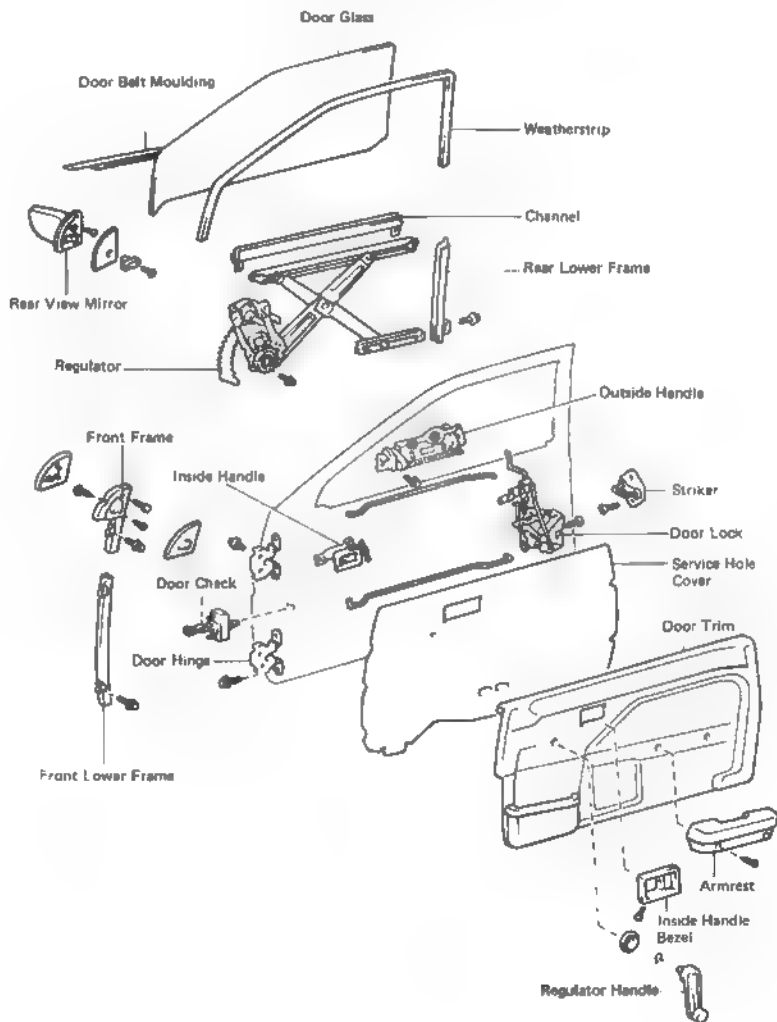
Adjust the hood by turning the cushions.

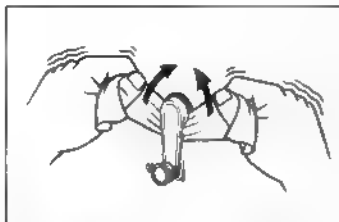


3. **ADJUST HOOD LOCK**

Loosen the mounting bolts to adjust.

FRONT DOOR COMPONENTS



**DISASSEMBLY OF FRONT DOOR**

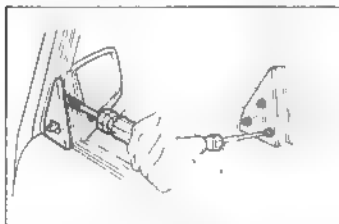
(See page BO-3)

1. REMOVE FOLLOWING PARTS:

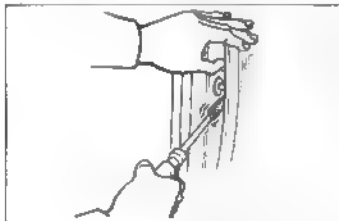
- (a) Door inside handle bezel
- (b) Armrest

2. REMOVE WINDOW REGULATOR HANDLE

Pull off the snap ring with a cloth and remove the regulator handle.

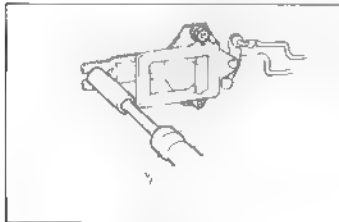
**3. REMOVE REAR VIEW MIRROR**

- (a) Remove the setting screws and knob.
- (b) Pry loose the retainer and remove the cover.
- (c) Remove the three setting screws and the mirror.

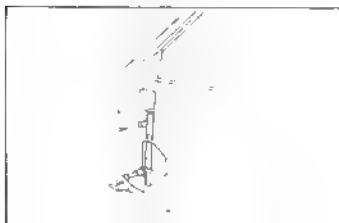
**4. REMOVE DOOR TRIM**

Pry loose the retainers with a screwdriver and remove the trim.

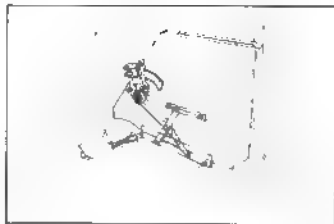
NOTE: Tape the screwdriver tip before use.

5. REMOVE SERVICE HOLE COVER**6. REMOVE DOOR INSIDE HANDLE**

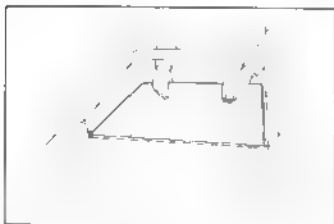
- (a) Remove the three screws.
- (b) Disconnect the control links from the door lock and remove the handle.

**7. REMOVE FRONT LOWER FRAME**

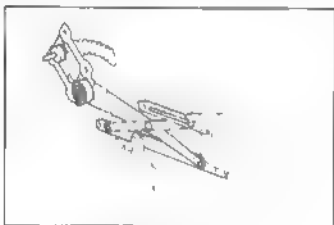
- (a) Remove the two mounting bolts.
- (b) Remove the lower frame from the front frame.

**8. REMOVE DOOR GLASS**

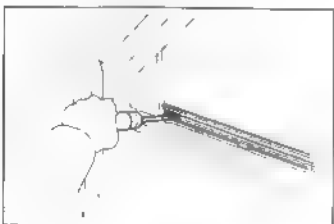
- (a) Remove the two glass channel mounting bolts.



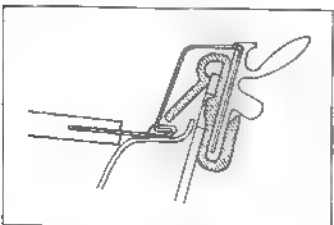
- (b) Remove the door glass by pulling it upward

**9. REMOVE WINDOW REGULATOR**

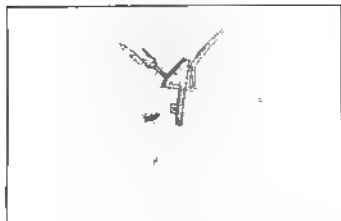
- (a) Remove the regulator mounting bolts.
(b) Remove the equalizer arm bracket mounting bolts.
(c) Remove the regulator through the service hole

**10. REMOVE DOOR BELT MOULDING**

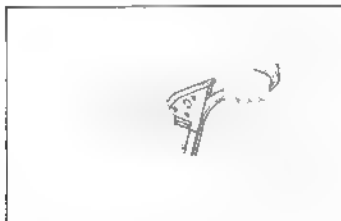
- (a) Remove the moulding setting screw.



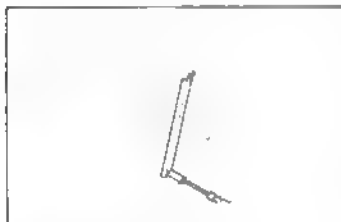
- (b) Pry loose the clips from the edge of the panel and remove the moulding.

**11. REMOVE FRONT FRAME**

(a) Remove the bolt and screw



(b) Remove the front frame.

**12. REMOVE REAR LOWER FRAME**

(a) Remove the mounting bolt.

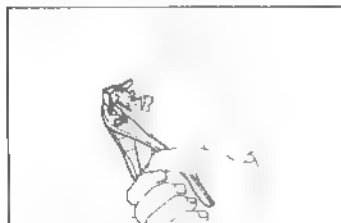
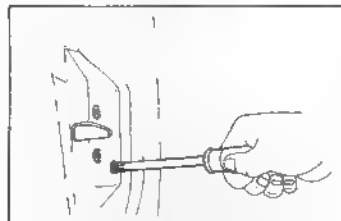
(b) Remove the frame from the glass run

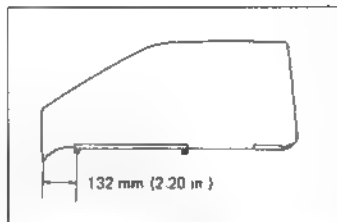
13. DISCONNECT FOLLOWING LINKAGES:

(a) Door inside opening control link

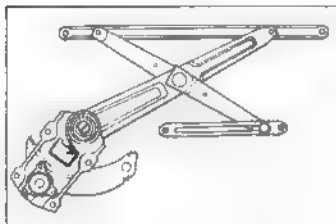
(b) Door outside opening control link

(c) Door outside locking control link

**14. REMOVE DOOR LOCK CYLINDER****15. REMOVE DOOR LOCK****16. REMOVE DOOR OUTSIDE HANDLE**

**REPLACEMENT OF GLASS**

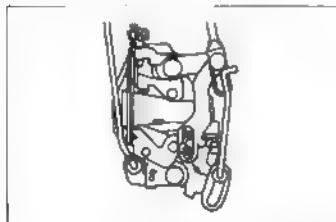
1. REMOVE GLASS CHANNEL WITH SCREWDRIVER OR SUCH
2. APPLY SOAPY WATER TO INSIDE OF WEATHERSTRIP
3. INSTALL CHANNEL BY TAPPING IT WITH PLASTIC HAMMER

**ASSEMBLY OF FRONT DOOR**

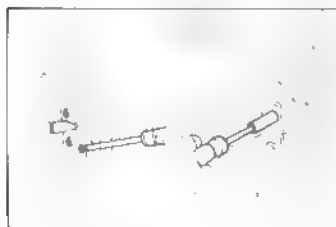
(See page BO-3)

1 BEFORE INSTALLING PARTS, COAT THEM WITH MP GREASE

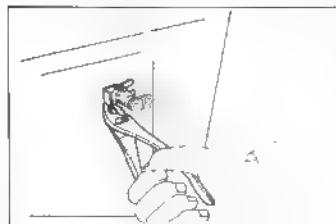
- (a) Coat the sliding surface, spring and gears of the window regulator with MP grease
- (b) Coat the sliding surface of the door lock with MP grease

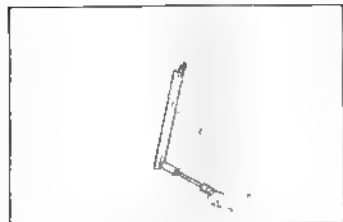
**2. INSTALL DOOR OUTSIDE HANDLE****3. INSTALL DOOR LOCK**

- (a) Install the door lock with three screws.
- (b) Install the control link adjusting bolt and connect the control link

**4. INSTALL DOOR LOCK CYLINDER**

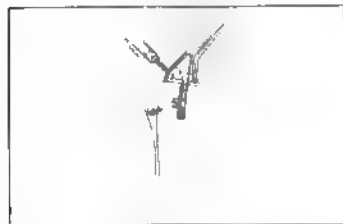
Install the lock cylinder with the retainer and connect the control link.





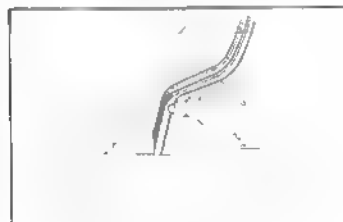
5. INSTALL REAR LOWER FRAME

- (a) Attach the glass run into the frame.
- (b) Install the frame with the bolt.

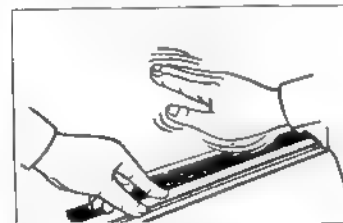


6. INSTALL FRONT FRAME

- (a) Place the frame in the door cavity
- (b) Install the screw and bolt

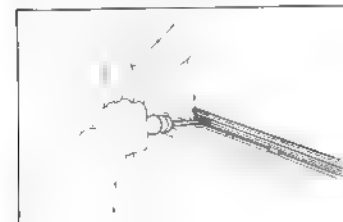


- (c) Attach the glass run into the frame

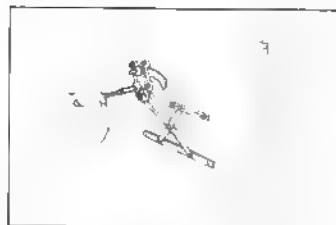


7. INSTALL DOOR BELT MOULDING

- (a) Tap the moulding onto the clips by hand.



- (b) Install the moulding setting screw.

**8. INSTALL WINDOW REGULATOR**

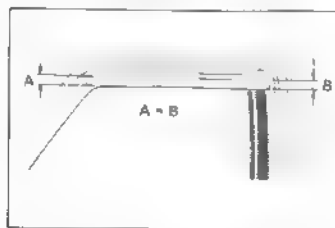
Place the regulator through the service hole and install the six mounting bolts.

**9. INSTALL DOOR GLASS**

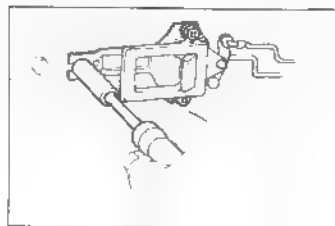
- (a) Place the glass in the door cavity
- (b) Install the glass to the regulator with the two mounting bolts.

**10. INSTALL FRONT LOWER FRAME**

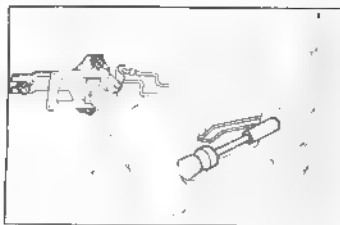
- (a) Attach the glass run into the frame
- (b) Install the frame with the bolts.

**11. ADJUST DOOR GLASS**

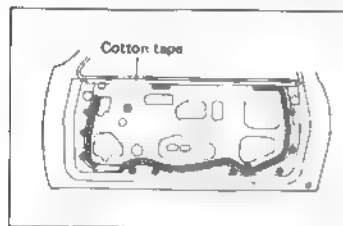
Adjust the equalizer arm up or down and tighten it where dimensions A and B, as shown, are equal.

**12. INSTALL DOOR INSIDE HANDLE**

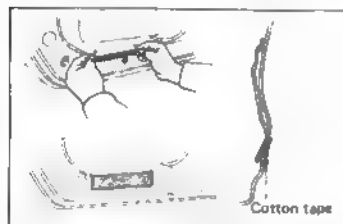
- (a) Connect the control links.
- (b) Install the handle with three screws.

**13. ADJUST DOOR INSIDE LOCK**

- (a) Loosen the adjusting bolt.
- (b) Lock the inside handle locking knob and tighten the adjusting bolt.

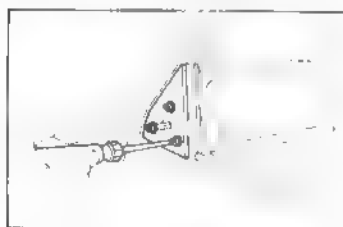
**14. INSTALL SERVICE HOLE COVER**

- (a) Seal the service hole cover with adhesive.
- (b) Install the cotton tape.

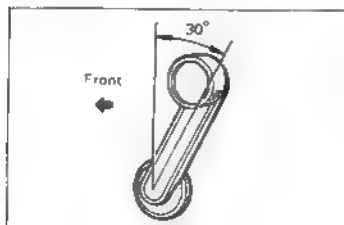


- (c) Insert the lower edge of the service hole cover into the panel slit.
- (d) Seal the panel slit with cotton tape.

CAUTION: Do not block the trim clip seating with the tape.

15. INSTALL DOOR TRIM**16. INSTALL REAR VIEW MIRROR**

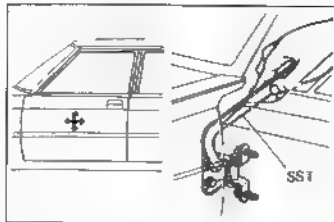
- (a) Install the mirror with three screws.
- (b) Push on the cover.
- (c) Install the knob with the screw.

**17. INSTALL WINDOW REGULATOR HANDLE**

With door window fully closed, install the window regulator handle, as shown, with a snap ring.

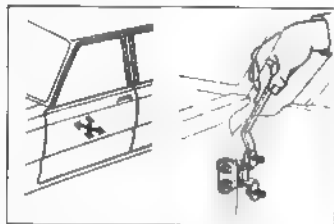
18. INSTALL FOLLOWING PARTS:

- (a) Armrest
- (b) Door inside handle bezel

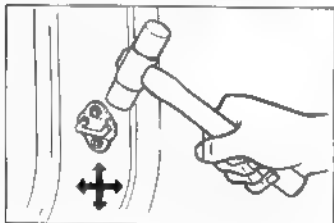
**ADJUSTMENT OF FRONT DOOR****1. ADJUST DOOR IN FORWARD/REARWARD AND VERTICAL DIRECTIONS**

Using SST, loosen the body side hinge bolts.

SST 09812-00010

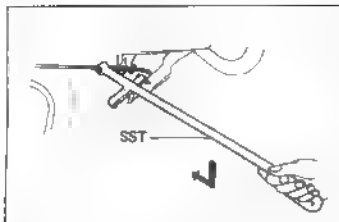
**2. ADJUST DOOR IN LEFT/RIGHT AND VERTICAL DIRECTIONS**

Using a wrench, loosen the door side hinge bolts.

**3. ADJUST DOOR LOCK STRIKER**

(a) Check that the door fit and door lock linkages are adjusted correctly.

(b) Adjust the striker by loosening the striker mounting screws.



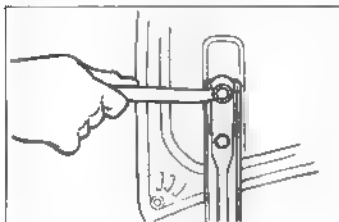
LUGGAGE COMPARTMENT LID AND BACK DOOR

REMOVAL OF TORSION BAR

Using SST, remove the torsion bar
SST 09804 13021

INSTALLATION OF TORSION BAR

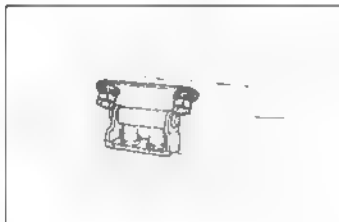
Using SST, install the torsion bar
SST 09804-13021



ADJUSTMENT OF LUGGAGE COMPARTMENT LID

[2-Door Coupe]

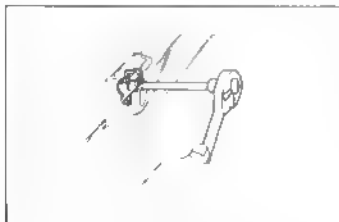
- (a) For forward/rearward and left/right adjustments, loosen the bolts.
- (b) For vertical adjustment of front end of the lid, increase or decrease the number of washers.



ADJUSTMENT OF BACK DOOR

[3-Door Coupe]

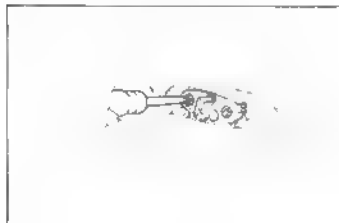
- (a) For forward/rearward and left/right adjustments, loosen the bolts
- (b) For vertical adjustment of the door front edge, increase or decrease the number of washers



ADJUSTMENT OF LOCK AND STRIKER

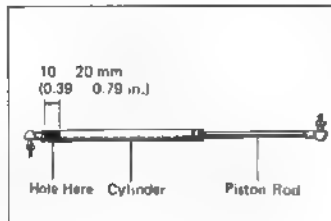
[2-Door Coupe]

Loosen the mounting bolts to adjust the lock and striker



[3-Door Coupe]

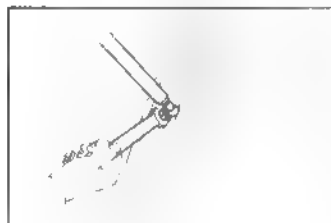
- (a) Remove the lower back panel cover
- (b) Loosen the mounting bolts to adjust the lock and striker



Back Door Damper Stay

CAUTION: Handling the damper.

- (a) Do not disassemble the damper because the cylinder is filled with gas.
- (b) If the damper is to be replaced, drill a 2.0 – 3.0 mm (0.079 – 0.118 in.) hole in the bottom of the removed damper cylinder to completely release the high-pressure gas before disposing of it.
- (c) When drilling, chips may fly out so work carefully.
- (d) The gas is colorless, odorless and not poisonous.
- (e) When working, handle the damper carefully. Never score or scratch the exposed part of the piston rod, and never allow paint or oil to get on it.
- (f) Do not turn the piston rod and cylinder with the damper fully extended.



REMOVAL OF DAMPER STAY

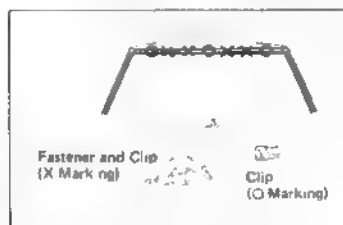
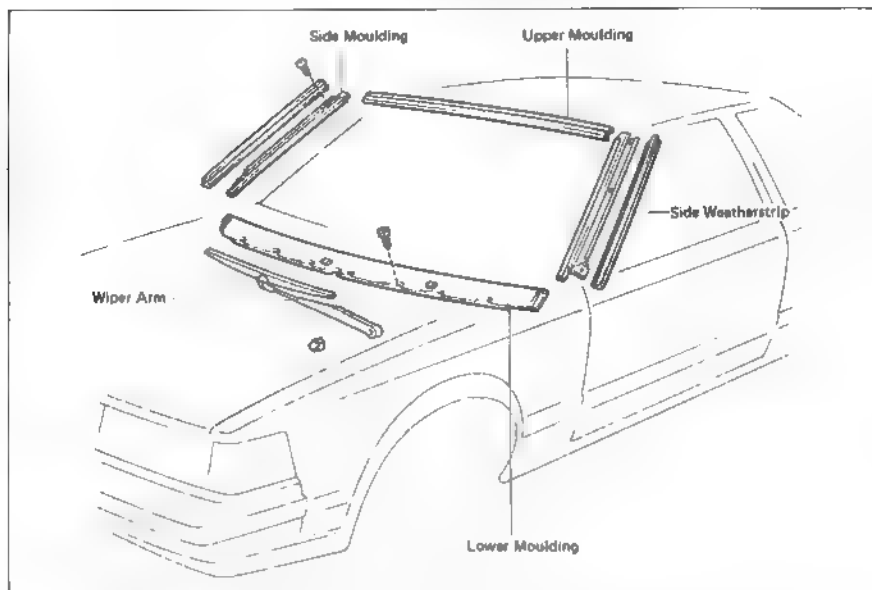
1. DISCONNECT DAMPER STAY UPPER END FROM BACK DOOR
2. REMOVE DAMPER STAY LOWER END FROM BODY

INSTALLATION OF DAMPER STAY

1. INSTALL DAMPER STAY UPPER END TO BACK DOOR
2. CONNECT DAMPER STAY LOWER END TO BODY

MOULDING

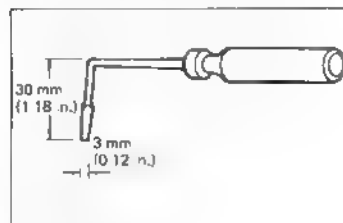
Windshield Outside Moulding COMPONENTS



REMOVAL OF OUTSIDE MOULDING

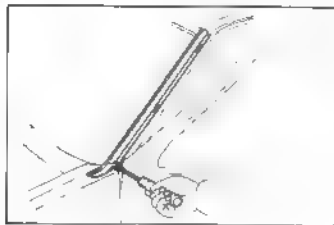
There are two types of clips for moulding installation. Locations of these clips and fasteners are as shown in the figure.

Carefully apply adhesive tape to protect the body.



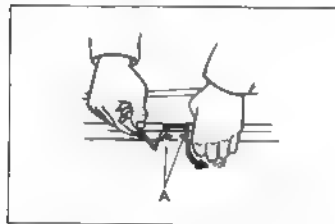
1. PREPARE SMALL SCREWDRIVER

Bend the screwdriver at right angle.



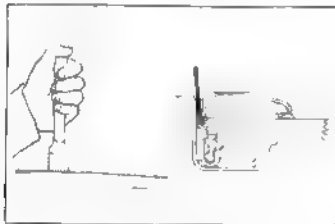
2. REMOVE SIDE MouldING

- (a) Remove the side weatherstrip.
- (b) Remove the three setting screws and remove the side moulding.

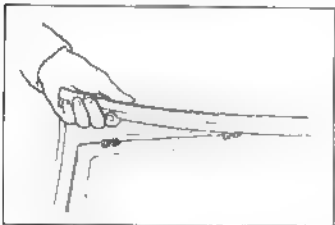


3. REMOVE UPPER MouldING

- (a) Insert the tip of the screwdriver between the moulding and clip, and twist it to pry loose the clasp (A) on the window side.



- (b) Pry loose the fasteners and clips and remove the moulding.

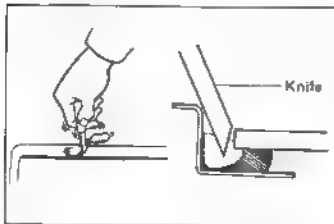


- (c) Slide the moulding out.

CAUTION: Do not bend the moulding.

4. REMOVE LOWER MouldING

- (a) Remove the wiper arms.
- (b) Remove the six screws and the moulding.



REPLACEMENT OF FASTENER AND CLIP

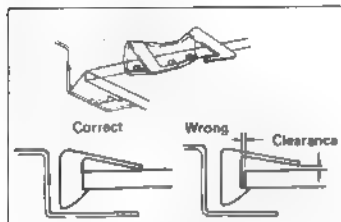
If any fastener or clip is damaged, replace it

1. REMOVE DAMAGED CLIP

2. CUT OLD ADHESIVE OFF AROUND CLIP INSTALLATION AREA

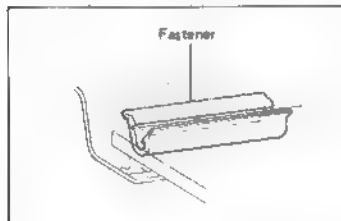
3. INSTALL CLIP

- (a) Grind a notch into the clip so it latches onto the glass edge



(b) Temporarily install the clip and insure that it is firmly attached to the glass.

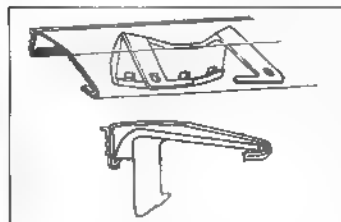
If the clip is loose, replace it.



4. REMOVE ANY DAMAGED FASTENER

5. CUT OLD ADHESIVE OFF AROUND FASTENER INSTALLATION AREA

6. INSTALL FASTENER ONTO BODY WITH DOUBLE-STICK TAPE



INSTALLATION OF OUTSIDE MOULDING

(See page BO-14)

1. INSTALL LOWER MOULDING

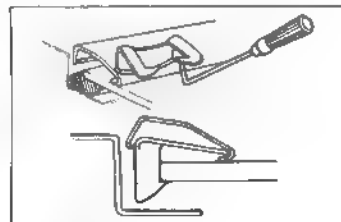
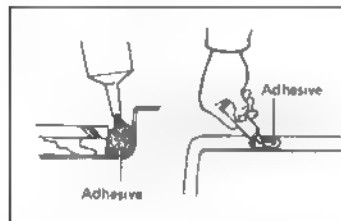
(a) Install the moulding and six screws.

(b) Install the wiper arms.

2. INSTALL NEW CLIP INTO MOULDING

Install the moulding to the body so that the clips and fasteners are not in a position where they will make contact with each other.

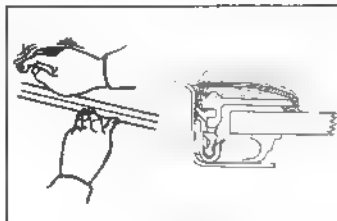
3. APPLY ADHESIVE AT CLIP INSTALLATION AREA



4. INSTALL UPPER MOULDING

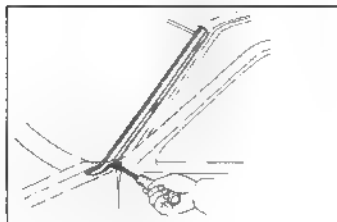
(a) Place the moulding onto the body

(b) Pry up the clips on the body side and install them to the moulding.



- (c) Tap the moulding with your hand to fasten the clasps at the glass edge.

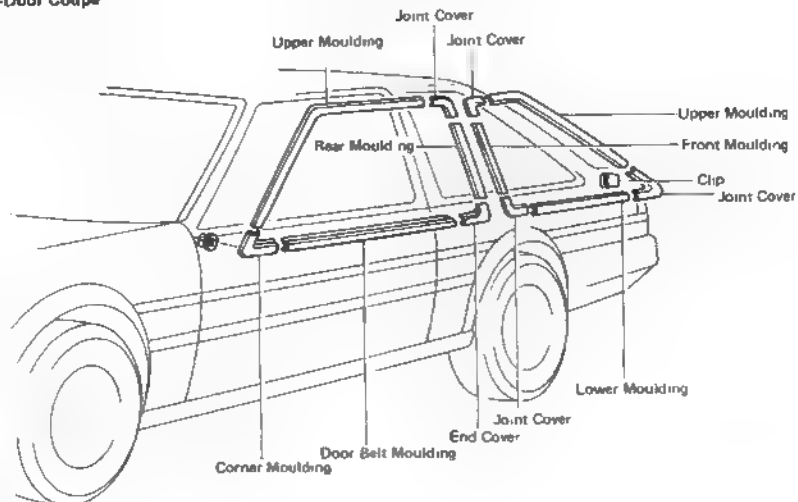
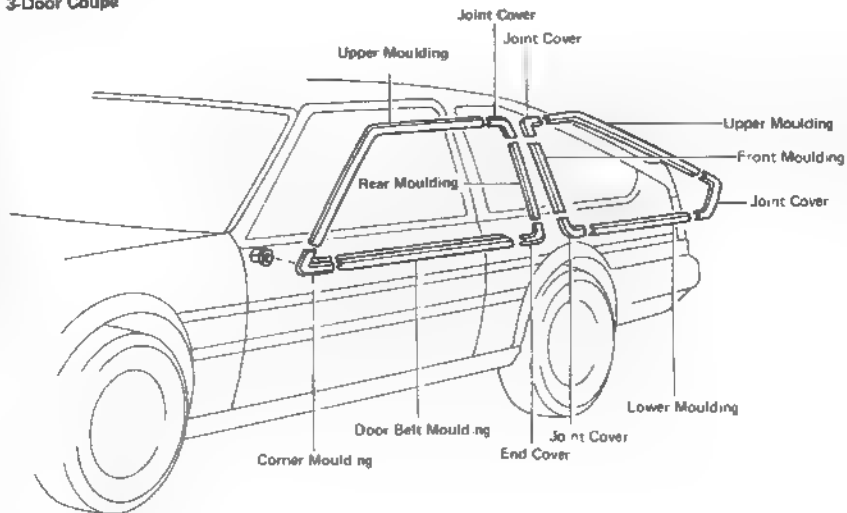
At the same time, tap on the fasteners by hand.

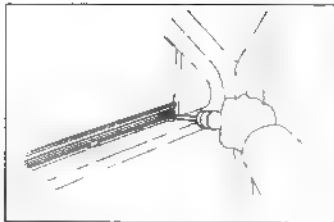


5. INSTALL SIDE MOULDING

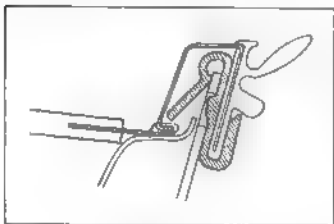
- (a) Install the side moulding and the three setting screws.
(b) Install the side weatherstrip.

Side Moulding COMPONENTS

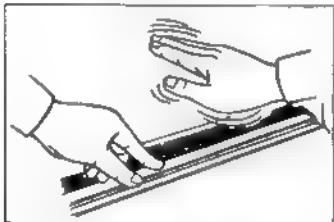
2-Door Coupe**3-Door Coupe**

**REMOVAL OF DOOR BELT MOULDING**

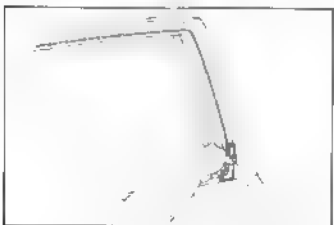
1. REMOVE DOOR GLASS (See page BO-6)
2. REMOVE DOOR BELT MOULDING
 - (a) Remove the moulding set screw



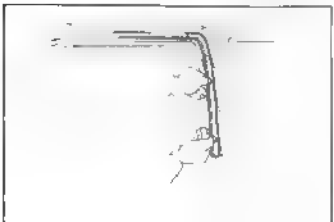
- (b) Pry loose the clips from the edge of the panel and remove the moulding

**INSTALLATION OF DOOR BELT MOULDING**

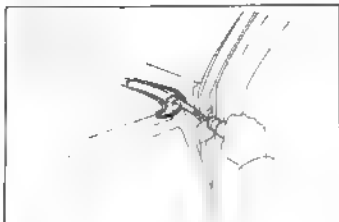
1. INSTALL BELT MOULDING
 - (a) Tap the moulding onto the clips by hand
 - (b) Install the moulding set screw
2. INSTALL DOOR GLASS (See page BO-9)

**REMOVAL OF DOOR FRAME MOULDING**

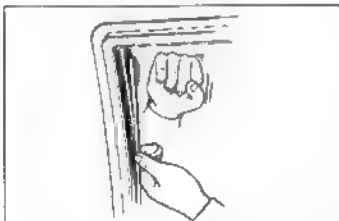
1. REMOVE DOOR BELT MOULDING (See page BO-18)
2. REMOVE FRONT FRAME (See step 11 on page BO-6)
3. REMOVE DOOR FRAME MOULDING
 - (a) Pull out the end cover.



- (b) Pull out the rear moulding, joint cover and upper moulding.



- (c) Remove the set nut and remove the corner moulding.



INSTALLATION OF DOOR FRAME MOULDING

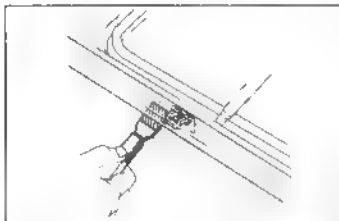
1. INSTALL DOOR FRAME MOULDING

- (a) Install the corner moulding and nut
(b) Align it with the frame and tap it in by hand.

2. INSTALL FRONT FRAME (See step 7 on page BO-8)

3. INSTALL DOOR BELT MOULDING

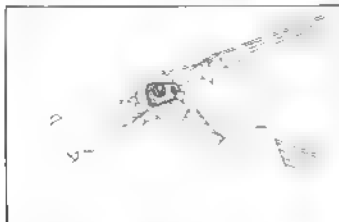
(See page BO-19)



REMOVAL OF QUARTER WINDOW MOULDING

REMOVE QUARTER WINDOW MOULDING

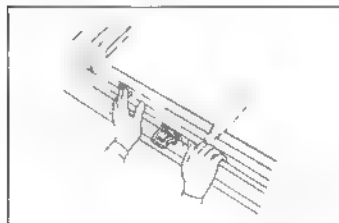
Insert a scraper and pry loose the clips.



INSTALLATION OF QUARTER WINDOW MOULDING

INSTALL QUARTER WINDOW MOULDING

- (a) Install the clip to the joint cover (2 Door Coupe only).



- (b) Attach the upper edge of the moulding to the clips.
(c) Fit the lower edge of the moulding, pushing it on with your hands.

Side Body Moulding

TOOLS AND SUPPLIES

Part No.	Part name	Quantity
08850-00051	Adhesive (Super special) 20g (0.70 oz)	1
08852-00050	Primer T 10g (0.35 oz)	1
	Unleaded gasoline (for cleaning body) Alcohol (for removing body oil stains) Heat lamp	

Precautions for storing moulding material

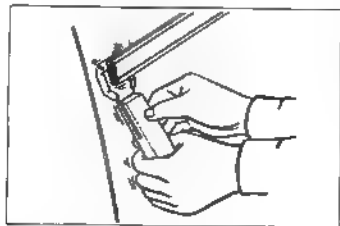
- Store in cool place, avoiding direct sun light, high temperature and dust.
- The moulding is of polyvinyl chloride, so do not allow it to come in contact with thinner or other solvent, open flame, or boiling water.
- The storage time for the moulding, adhesive and Primer T is limited to about 9 months.

REMOVAL OF SIDE BODY MOULDING

1. REMOVE ENDS OF MOULDING

Using a scraper, pry the moulding loose about 20 mm (0.79 in.) from the ends.

NOTE: Apply tape to the scraper blade to prevent scratching the vehicle body.

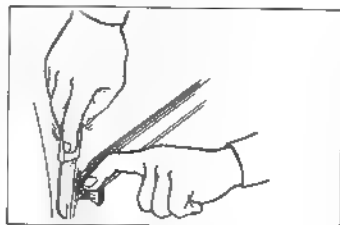


2. REMOVE MOULDING AND ADHESIVE

- Pull off the mouldings by cutting the adhesive with a knife
- Scrape off adhesive from the body with a cutter or sandpaper

CAUTION.

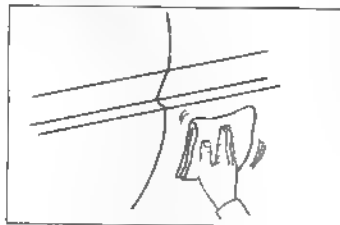
- 30 - 80 mm (1.18 - 3.15 in.) of the ends of the moulding are glued tightly with a strong adhesive.
- Do not reuse mouldings.

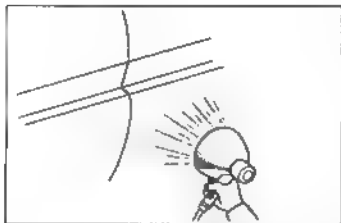


INSTALLATION OF SIDE BODY MOULDING

1. CLEAN MOULDING MOUNTING SURFACES

- Wipe off stains with unleaded gasoline
- Wipe off the unleaded gasoline with an alcohol-saturated rag.

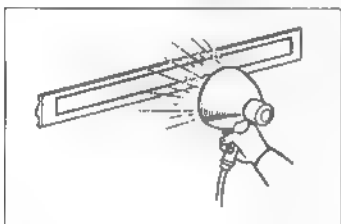




2. HEAT BODY MOUNTING SURFACE

Using a heat lamp, heat the body mounting surfaces to 30 – 50°C (86 – 122°F)

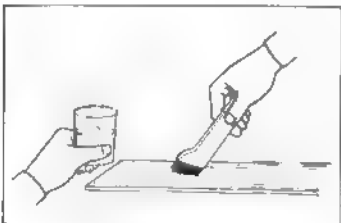
CAUTION: When the moulding is installed, the temperature of the mounting surface should be 20°C (68°F) or higher.



3. HEAT MOULDING

Using a heat lamp, heat the moulding to 30 – 60°C (86 – 140°F)

CAUTION: Do not heat the moulding excessively. The temperature should not be higher than 80°C (176°F).



4. COAT MOULDING WITH PRIMER "T"

Using a brush, coat both of the punched out ends of the moulding tape with Primer T.

CAUTION:

- Let Primer T dry for 30 seconds or more.
- Do not touch the Primer T coating.



5. APPLY ADHESIVE TO MOULDING

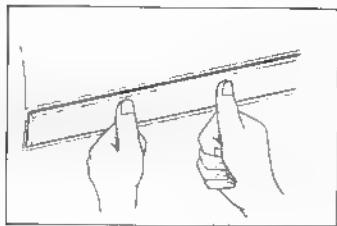
Apply adhesive to both of punched out ends of the moulding.

CAUTION: Install the moulding within 7 minutes after applying the adhesive.

6. LIFT MOULDING RELEASE SHEET FROM FACE OF MOULDING

CAUTION:

- When the moulding release sheet is removed, be sure that no dirt or dust can get onto the uncovered area.



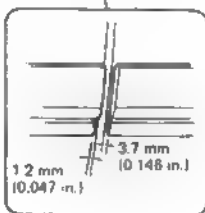
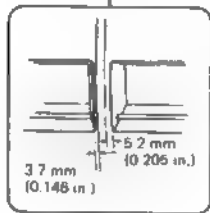
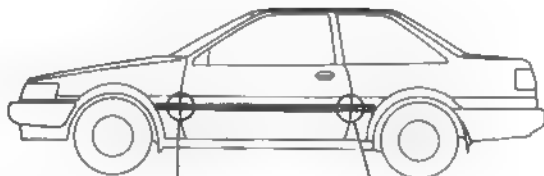
7. INSTALL MOULDING ALONG BODY PRESS LINE

Fit the moulding along the body press line, leaving the spaces shown in the illustration.

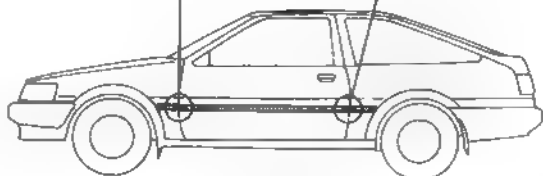
CAUTION:

- Be sure that the body and moulding are heated to the proper temperature.
- Do not depress adhesive coated parts excessively: just hold them down with your thumb.
- Scrape off any overflowing adhesive with a plastic spatula and clean the surface with a dry rag.
- After installation do not wash the vehicle for 24 hours.

2-Door Coupe



3-Door Coupe



WINDSHIELD

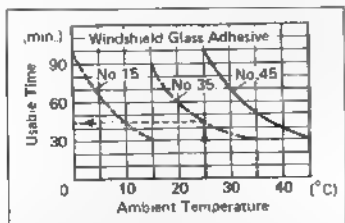
TOOLS AND SUPPLIES

Part name and Part No.	Contents of set	Quantity
Adhesive set 08850-00070 [0 - 15°C (32 - 59°F)] 08850-00080 [15 - 35°C (59 - 95°F)] 08850-00090 [35 - 45°C (95 - 113°F)]	Main agent 500 g (17.5 oz.) Hardening agent 75 g (2.63 oz.) Primer G (for glass) 20 g (0.70 oz.) Primer M (for body) 20 g (0.70 oz.) Sponge for applying primer Piano wire 0.6 mm dia. x 1 m (0.024 in. dia. x 39.37 in.) Cartridge	1 can 1 ea. 1 ea. 1 ea. 1 ea. 1 ea. 1 ea.
Dam kit 04562 30030	Dam Double-stick tape (for sticking on dam)	
	Sealant gun (for applying adhesive) Glass or steel sheet (for mixing adhesive) Putty spatula (for mixing adhesive and correcting adhered parts) Solvent (Alcohol, lead-free gasoline) (for cleaning adhering surfaces)	

Ambient temperature	Part No.	Part name
0 - 15°C (32 - 59°F)	08850-00070	Windshield glass adhesive set No. 15
15 - 35°C (59 - 95°F)	08850-00080	Windshield glass adhesive set No. 35
35 - 45°C (95 - 113°F)	08850-00090	Windshield glass adhesive set No. 45

1 CHOOSE SUITABLE ADHESIVE SET

Use an adhesive set suitable for the ambient temperature.

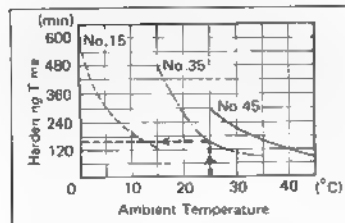


2. CHECK ADHESIVE USABLE TIME

After mixing the main and hardening agents, finish glass installation within the specified time as shown.

Example:

For glass installation in an ambient temperature of 25°C (77°F), apply adhesive set No. 35 within 45 minutes.



3. CHECK ADHESIVE HARDENING TIME

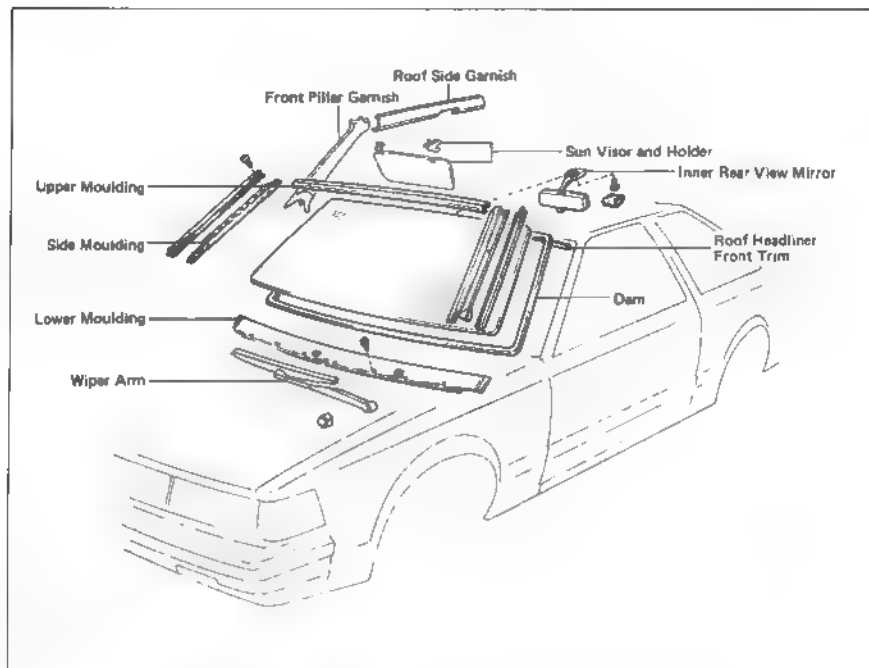
First, mix the main and hardening agents. Then, perform a leak test only after the hardening time has elapsed.

Example:

The hardening time for adhesive set No. 35 with an ambient temperature of 25°C (77°F) is 2½ hours.

CAUTION: Do not drive the vehicle until at least double the hardening time has elapsed.

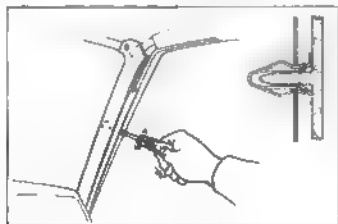
COMPONENTS



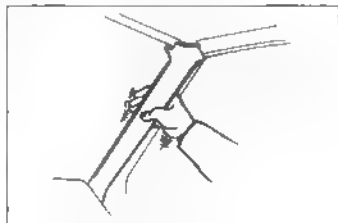
REMOVAL OF WINDSHIELD

1. REMOVE ROOF SIDE GARNISH
2. REMOVE FRONT PILLAR GARNISH

(a) Pry out the clips with a screwdriver.



(b) Pull the garnish upward to remove it.



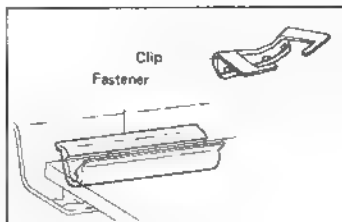
3. REMOVE FOLLOWING PARTS:

- (a) Sun visor and holder
- (b) Inner rear view mirror
- (c) Roof headliner front trim

4. REMOVE WINDSHIELD MOULDING (See page 80-14)**5. REMOVE CLIPS**

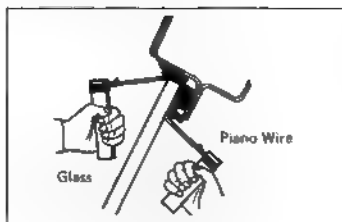
Be careful not to damage the clips when removing them from around the glass.

NOTE: It is not necessary to remove the fasteners but damaged fasteners should be replaced.

**6. REMOVE WINDSHIELD GLASS**

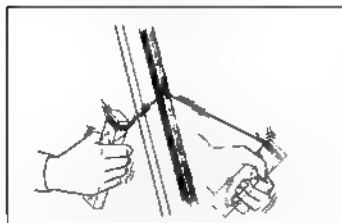
- (a) Push piano wire through from the interior.
- (b) Tie both wire ends to a wooden block or equivalent.

CAUTION: When separating, take care not to damage the paint or interior and exterior ornaments.



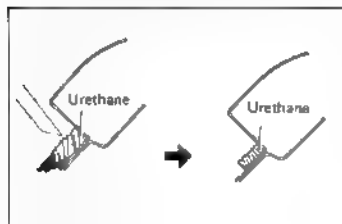
- (c) Cut the adhesive by pulling the piano wire around it.
- (d) Remove the glass.

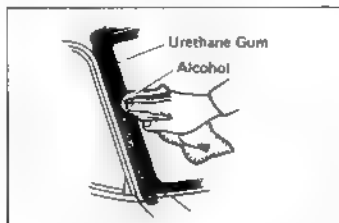
CAUTION: Cut off the glass, leaving as much of the urethane layer on the body as possible.

**INSPECTION AND CLEANING****1. CLEAN CONTACT SURFACE OF BODY**

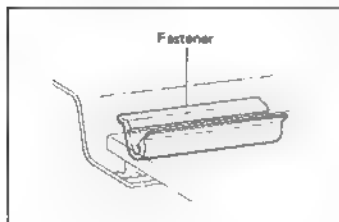
- (a) Remove any dam remaining on the body

NOTE: Leave as much urethane layer on the body as possible.



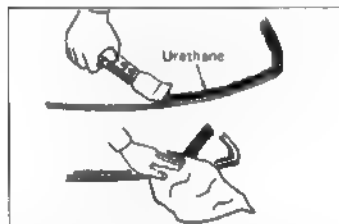


- (b) Clean the cutting surface of the urethane gum with a piece of cloth saturated in solvent (alcohol)



2. IF FASTENERS ARE DAMAGED

- Remove any damaged fastener
- Cut off the old adhesive around the fastener installation area.
- Install a new fastener



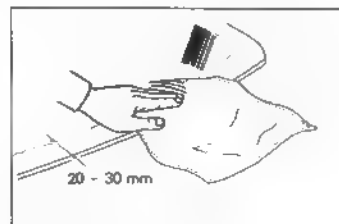
3. CLEAN REMOVED GLASS BEFORE INSTALLATION

- Using a scraper, remove the urethane gum sticking to the glass.
- Clean the glass with alcohol.



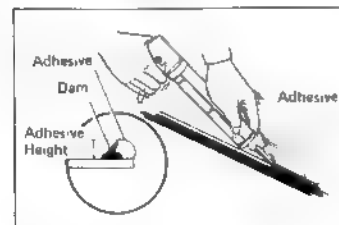
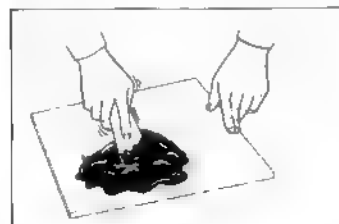
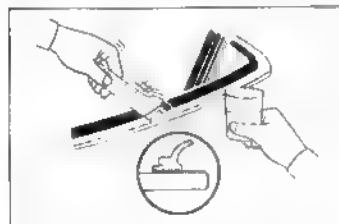
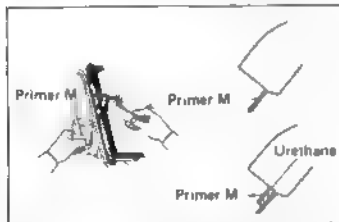
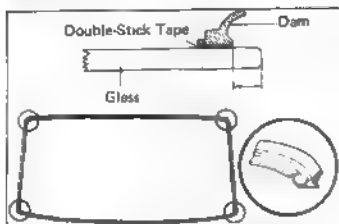
4. POSITION GLASS

- Place the glass in correct position.
- Check that all contacting parts of the glass rim are perfectly even and do not make contact with the fasteners.
- Make reference marks between the glass and body
- Remove the glass.



5. CLEAN CONTACT SURFACE OF GLASS

Using alcohol or similar solvent, clean the contact surface 20 - 30 mm (0.79 - 1.18 in.) wide around the entire glass rim.



INSTALLATION OF WINDSHIELD

1. INSTALL DAM

- (a) Apply double-stick tape as follows:
For laminated glass, 9 mm (0.35 in.) from upper and side rim and 7.5 mm (0.30 in.) from bottom rim.
For reinforced glass, 9 mm (0.35 in.) from upper and side rim and 30.5 mm (1.20 in.) from bottom rim.
- (b) Place the dam on the double-stick tape.
- NOTE: Cut a V wedge into the corner folds of the dam.
- CAUTION: Do not touch the glass face after cleaning it.

2. COAT CONTACT SURFACE OF BODY WITH PRIMER "M"

Using a brush, coat the contact surface on the body with Primer M.

CAUTION

- Let the Primer coating dry for 10 minutes or more. Make sure that the installation of the glass is finished within 2 hours.
- Use care not to leave any part of the contact surface uncoated or excessively coated as Primer M and G serve to boost the adhesive power of urethane to glass or body.
- Do not keep any of the opened Primer M and G for later use.

3. COAT CONTACT SURFACE OF GLASS WITH PRIMER "G"

- (a) Using a brush or sponge, coat the edge of the glass and the contact surface with Primer G.
- (b) Before the Primer dries, wipe it off with a clean cloth.
- CAUTION: Be sure that installation of the glass is finished within 70 minutes.

4. MIX ADHESIVE COATING

CAUTION:

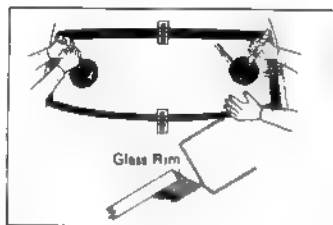
- Be sure that installation of the glass is finished within usable time.
(See step 2 on page 80-24)
- Mixture should be made in 5 minutes or less.
- (a) Thoroughly clean the glass plate and putty spatula with solvent.
- (b) Using a putty spatula, thoroughly mix the main 500g (17.6 oz) and hardening agents 75g (2.65 oz) on a glass plate or such.

5. APPLY ADHESIVE

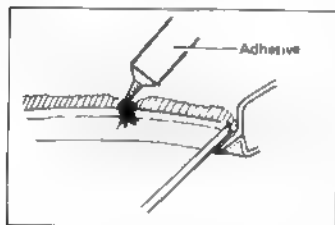
- (a) Cut off the tip of the cartridge nozzle, making a hole 5 mm (0.20 in.) in diameter. Fill the cartridge with adhesive.
- (b) Load the cartridge into the sealer gun.
- (c) Coat the glass with adhesive on all contact surfaces along the ridge.

Adhesive height:

If there is adhesive on body	3.5 - 5.0 mm (0.138 - 0.197 in.)
If there is no adhesive on body	9 - 10 mm (0.31 - 0.40 in.)

**6. INSTALL GLASS**

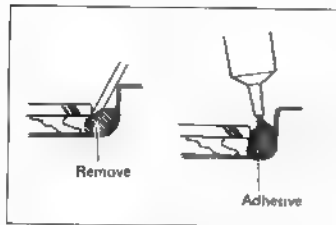
- Position the glass so that reference marks are lined up, and press in gently along the rim.
- Using a spatula, apply adhesive to the glass rim.
- Use a spatula to remove any excess or protruding adhesive.
- Fasten the glass securely until the adhesive sets.

**7. INSPECT FOR LEAKS AND REPAIR**

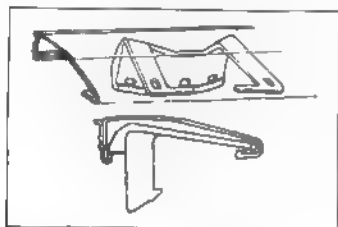
- Perform a leak test after the hardening time has elapsed.
- Seal any leak with adhesive or auto glass sealer.

Part No. 08705-00010

CAUTION: Wait at least twice the hardening time before driving the car.

**8. INSTALL UPPER MOULDING**

- Using a knife, remove the adhesive around the installation area of the clips.
 - Apply adhesive to the installation area of the clips.
- NOTE:** Loosely install the clip and confirm that the clip arm is not protruding above the surface.

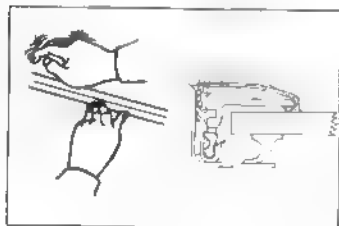


- Install the clips into the moulding. When installing the moulding, be sure that the clips and fasteners on the body side do not make contact.

- Fit on the upper moulding and tap the fasteners on by hand.

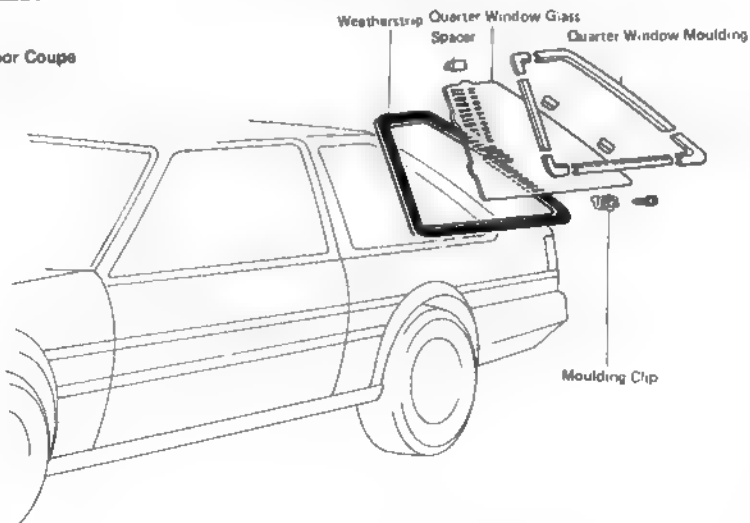
9. INSTALL LOWER AND SIDE MOULDING**10. INSTALL FOLLOWING PARTS:**

- Roof headliner front trim
- Inner rear view mirror
- Sun visor and holder

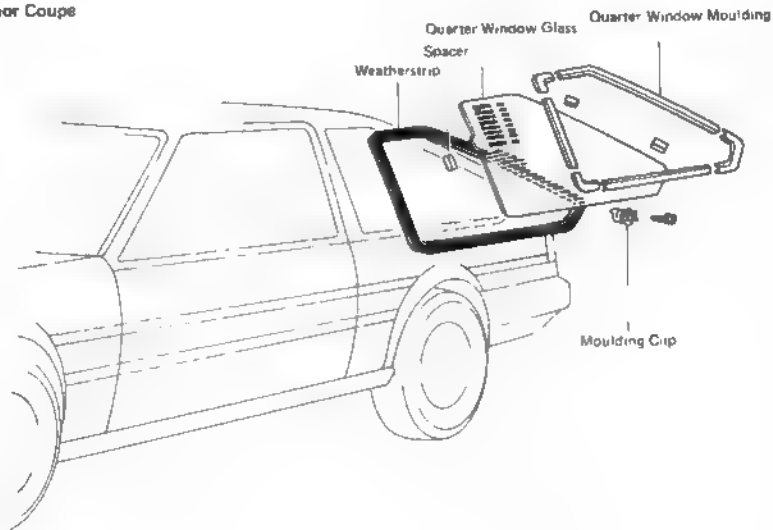
11. INSTALL FRONT PILLAR GARNISH**12. INSTALL ROOF SIDE GARNISH**

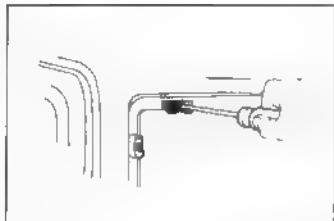
QUARTER WINDOW GLASS COMPONENTS

2-Door Coupe



3-Door Coupe

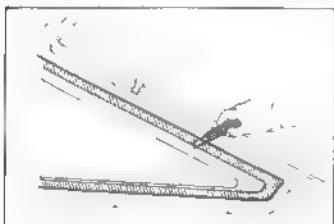


**REMOVAL OF QUARTER WINDOW GLASS**

1. **REMOVE QUARTER WINDOW MOULDING**
(See page BO-20)

2. **REMOVE MOULDING CLIP**

- (a) Using a screwdriver, remove the moulding clip set screws.
- (b) Remove the clips.



3. **REMOVE QUARTER WINDOW GLASS**

- (a) Using a knife, cut loose the adhesive
- (b) Remove the glass

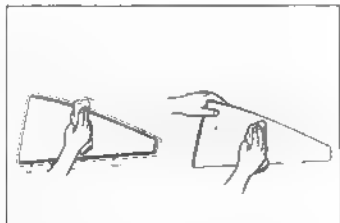
INSTALLATION OF QUARTER WINDOW GLASS

1. **PREPARE ITEMS LISTED**

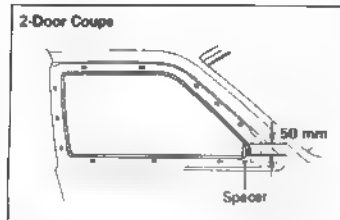
Part Name and Part No.	Contents of Set
Butyl tape set (08850 00085)	Butyl tape 9 mm dia. x 2,500 mm (0.35 x 98.43 in.) Primer 5 cc Sponge (for applying Primer) Piano wire 1 mm dia. x 600 mm (0.04 x 23.62 in.) (for cutting around glass)
Materials required	Solvent (Alcohol unleaded gasoline) (for cleaning adhering surfaces)
Weatherstrip (62741 12130) (62741-12120)	For 2-Door Coupe For 3-Door Coupe

2. **CLEAN BODY OR GLASS**

Wipe off any adhesive left on the body or glass with alcohol or unleaded gasoline



2-Door Coupe

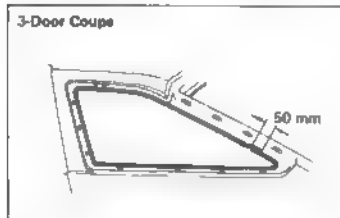
**3. INSTALL WEATHERSTRIP TO BODY**

- (a) Install the weatherstrip to the body.

NOTE: Apply weatherstrip over 50 mm (1.97 in.) of the rear area.

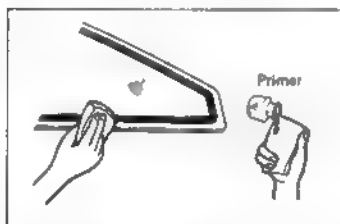
- (b) Install the spacer to the body (2-Door Coupe only)

3-Door Coupe

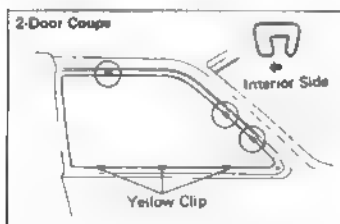
**4. INSTALL QUARTER GLASS**

- (a) Using a sponge, coat the glass adhering surface with primer.

- (b) Let the primer coating dry for 10 minutes.



2-Door Coupe

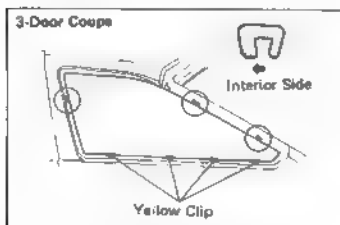


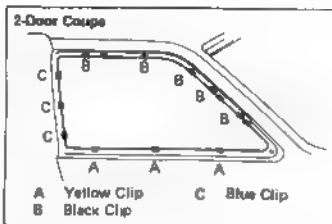
- (c) Install the spacer to the glass.

- (d) Install the moulding clips (yellow) to the glass lower side.

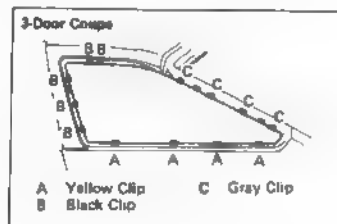
- (e) Install the glass.

3-Door Coupe



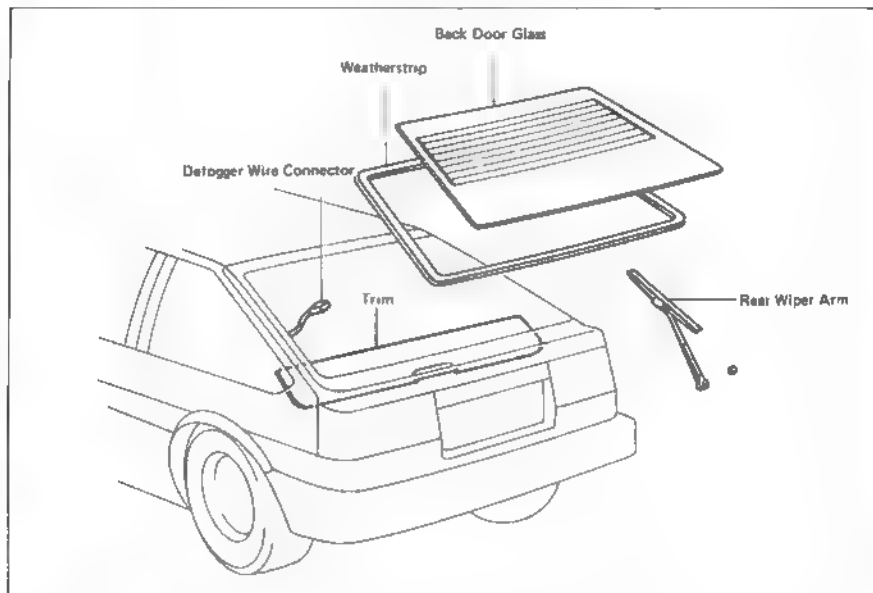


- (f) Install the moulding clips to the body.
- (g) Using a screwdriver, install the moulding setting screws.



5. INSTALL QUARTER WINDOW MOULDING
(See page 80-20)

BACK DOOR GLASS (3-Door Coupe) COMPONENTS



REMOVAL OF BACK DOOR GLASS

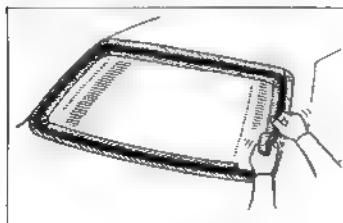
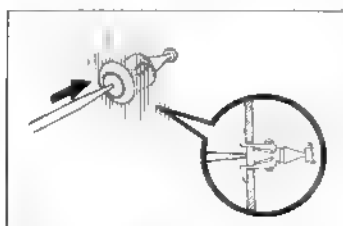
1. REMOVE TRIM

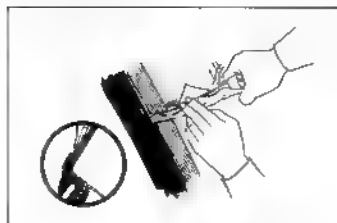
Push on the center of the clip with a thin object to remove it.

2. REMOVE REAR WIPER ARM

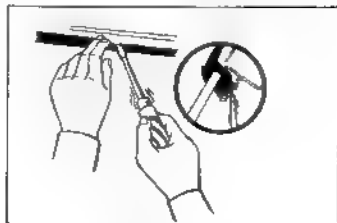
3. DISCONNECT DEFOGGER WIRE CONNECTOR

4. APPLY ADHESIVE TAPE TO PROTECT BODY

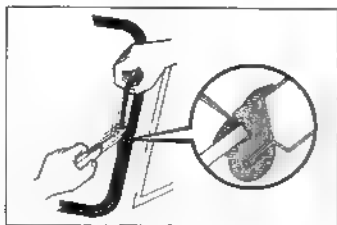


**5. REMOVE GLASS****If reusing weatherstrip**

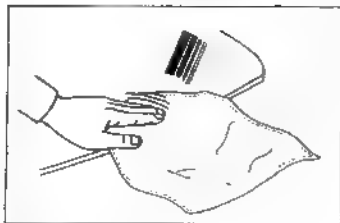
- (a) Working from the vehicle outside with a screwdriver, loosen the weatherstrip lip from the body



- (b) Force the weatherstrip lip from the interior to the outside body flange. Pull the glass outwards and remove it with the weatherstrip

**If not reusing weatherstrip:**

- (a) From the outside, cut off the weatherstrip lip with a knife.
- (b) From the vehicle interior, push the glass with an even force.
- (c) Pull off the weatherstrip from the body

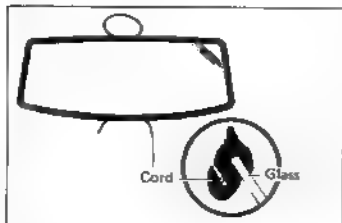


INSTALLATION OF BACK DOOR GLASS

(See page BO-34)

1. CLEAN BODY AND GLASS

Wipe off any adhesive left on the body or glass with alcohol.

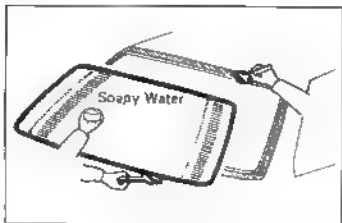


2. INSTALL WEATHERSTRIP ON GLASS

(a) Attach the weatherstrip to the glass.

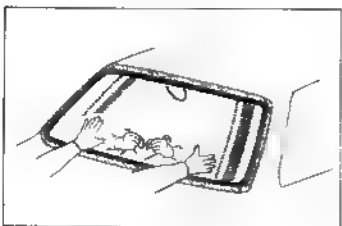
CAUTION: If the weatherstrip has hardened, it may develop water leaks. Use a new one if possible.

(b) Apply a working cord along the weatherstrip groove as shown.



3. INSTALL GLASS

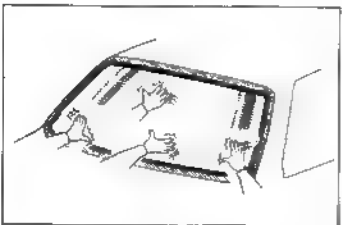
(a) Apply soapy water to the contact face of the weatherstrip lip and to the body flange.



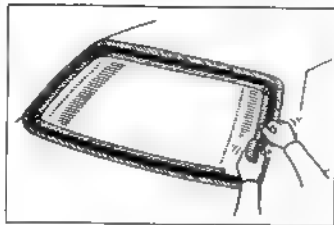
NOTE: Begin installation from the lower center part of the glass.

(b) Hold the glass in position on the body.

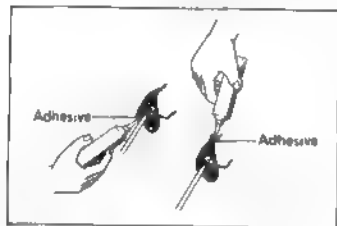
(c) Install the glass by pulling the string from the interior, while pushing on the outside of the weatherstrip with your open hand.



(d) To snug the glass in place, tap from the outside with your open hand.

**4. APPLY ADHESIVE**

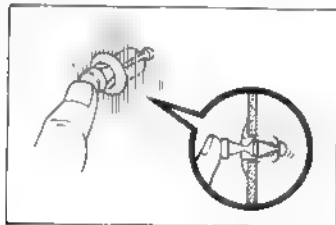
- (a) Put masking tape around the weatherstrip to protect the paint and glass.



- (b) Apply adhesive between the weatherstrip and glass and between the weatherstrip and body.

Part No. 08704-00020

NOTE. When the adhesive is dry, remove the masking tape.

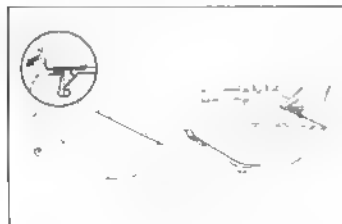
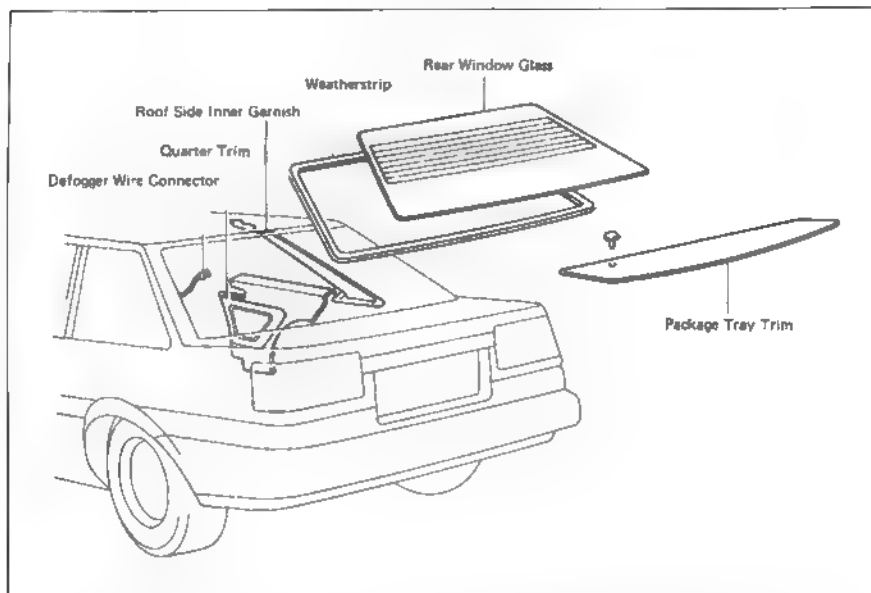
**5. INSTALL TRIM**

Install the clip to the trim and then push in the clip pin.

6. INSTALL FOLLOWING PARTS:

- (a) Window defogger wire connector
(b) Rear wiper arm

REAR WINDOW GLASS (2-Door Coupe) COMPONENTS



REMOVAL OF REAR WINDOW GLASS

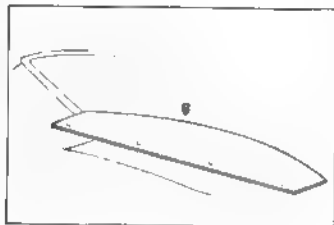
1. REMOVE REAR SEAT CUSHION

- (a) Pull the hook levers forward and pull up the front of the seat cushion
- (b) Push down on the rear of the seat cushion and pull it forward.

2. REMOVE FOLLOWING PARTS:

- (a) Rear seat back and hinge
- (b) Quarter trim
- (c) Roof side inner garnish
- (d) Roof headliner rear trim

3. DISCONNECT DEFOGGER WIRE CONNECTOR

**4. REMOVE PACKAGE TRAY TRIM BOARD**

- (a) From the trunk, push up the trim board clip and remove it.
- (b) Remove the trim board

5. REMOVE REAR WINDOW GLASS

SEE
BACK DOOR GLASS SECTION

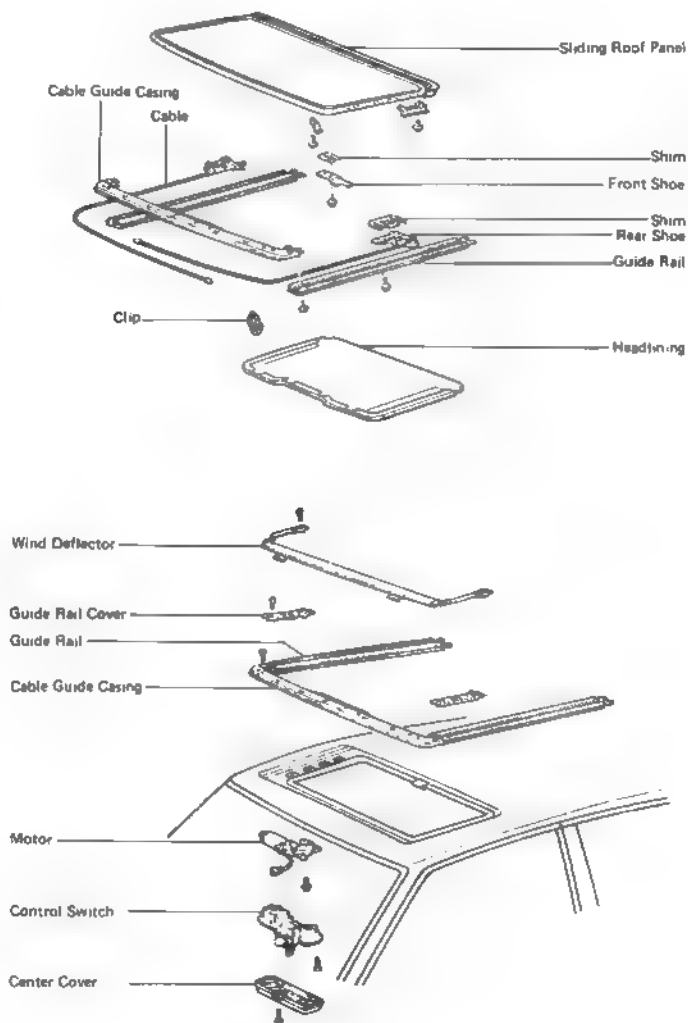
INSTALLATION OF REAR WINDOW GLASS**1. INSTALL REAR WINDOW GLASS**
(See page BO-36)**2. INSTALL PACKAGE TRAY TRIM BOARD**

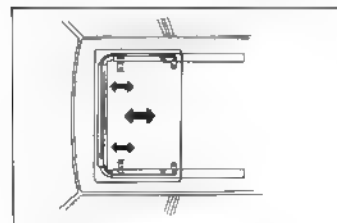
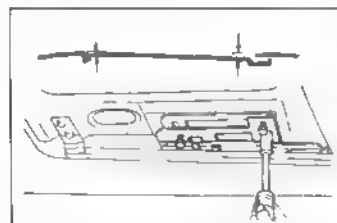
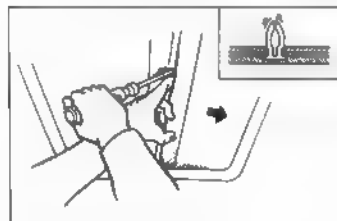
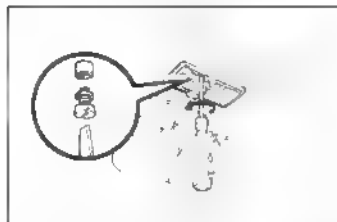
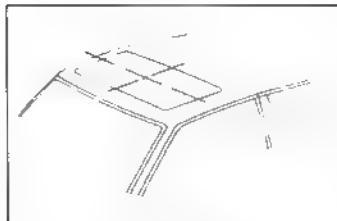
- (a) Install the trim board
- (b) Install the clip.

3. CONNECT DEFOGGER WIRE CONNECTOR**4. INSTALL FOLLOWING PARTS**

- (a) Roof headliner rear trim
- (b) Roof side inner garnish
- (c) Quarter trim
- (d) Rear seat back and hinge
- (e) Rear seat cushion

SUN ROOF COMPONENTS





ON-VEHICLE INSPECTION

- (a) Start the engine and check the operation time of the sun roof.

Operation time: Approx. 6 secs.

- (b) Check for abnormal noise or binding during operation.
- (c) With the sun roof fully closed, check for water leakage.
- (d) Check for a level difference between the sliding panel and roof panel.

Front side: $0 \pm 1.5 \text{ mm}$ ($0 \pm 0.059 \text{ in.}$)

Rear side: $0 \pm 1.5 \text{ mm}$ ($0 \pm 0.059 \text{ in.}$)

Left and right side: $0 \pm 1.5 \text{ mm}$ ($0 \pm 0.059 \text{ in.}$)

If the sliding roof does not operate

- (a) Remove the center cover of the control box.
- (b) Remove the screw inside.

CAUTION: Be careful not to lose the spring washer or washer.

- (c) Manually operate the sun roof by inserting a screwdriver into the hole and turning the drive shaft.

ADJUSTMENT OF SLIDING ROOF

1. REMOVE HEADLINING

Before making adjustments, pull loose the clips and slide the headlining to the rear.

NOTE: When checking adjustment, reattach the headlining before sliding the roof.

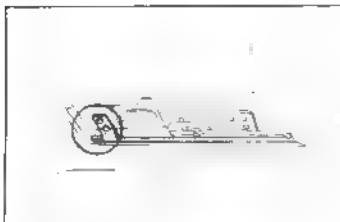
2. TO ADJUST LEVEL DIFFERENCE

Adjust by increasing or decreasing the number of shims.

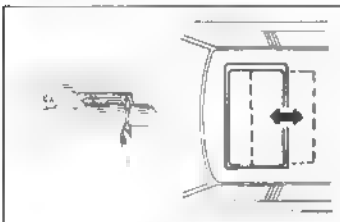
NOTE: If the front end is high, even without a shoe shim, check to see if the front shoes are in contact with the stoppers.

3. TO ADJUST FORWARD OR REARWARD

Adjust by moving the front shoe on both sides.

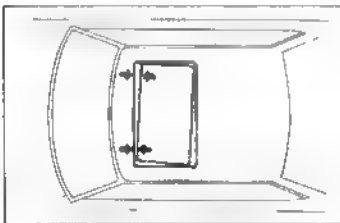


NOTE: When the sliding roof is fully closed, confirm that the front shoes are in contact with the stopper.



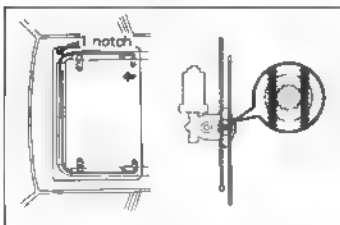
4. TO ADJUST RIGHT OR LEFT

Adjust by loosening the rear shoe bolts and moving the sliding roof to the right and left



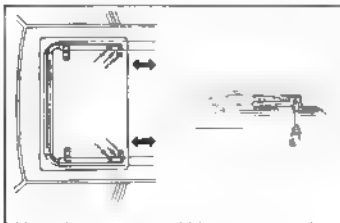
5. TO ADJUST CLEARANCE

(Difference in left and right front clearance)



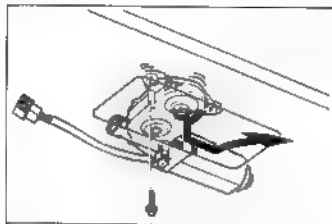
If the difference is about 2 mm (0.08 in.):

- (a) Remove the drive motor and shift the cable one notch on the side with the larger clearance.
- (b) Reinstall the motor

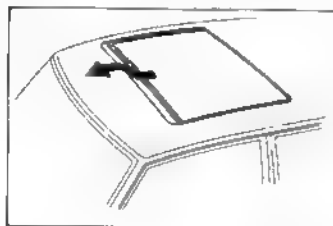


If the difference is about 1 mm (0.04 in.):

Loosen the rear shoe bolts and readjust the sliding roof to the proper position.

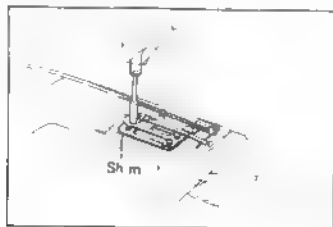
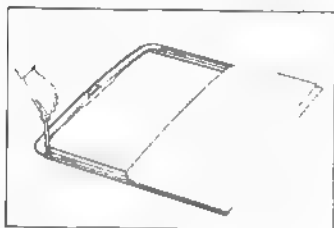
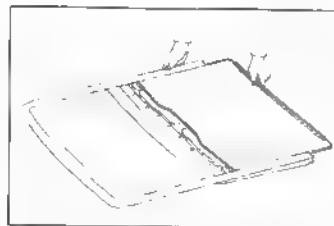
**REMOVAL OF SUN ROOF**

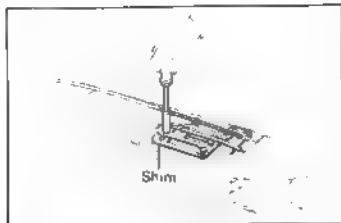
1. DISCONNECT BATTERY CABLE FROM BATTERY
2. REMOVE CENTER COVER OF CONTROL BOX
3. REMOVE CONTROL SWITCH
4. REMOVE MOTOR THROUGH SERVICE HOLE
5. REMOVE WIND DEFLECTOR
6. REMOVE GUIDE RAIL COVER
7. REMOVE SLIDING ROOF AND GUIDE RAIL
 - (a) Apply adhesive tape to protect the body.
 - (b) Pull the sliding roof with the guide rail upward and forward to remove

**DISASSEMBLY OF SUN ROOF**

(See page BO-40)

1. REMOVE SLIDING ROOF HEADLINING
 - (a) Pry off the clip.
 - (b) Pull the sliding roof headlining rearward to remove
2. REMOVE GUIDE RAIL AND CABLE GUIDE CASING
 - (a) Loosen the screw.
 - (b) Pull the guide rail rearward to remove.
 - (c) Pull the cable guide casing forward to remove
3. NOTE THE NUMBER OF SHIMS ON THE FRONT AND REAR
4. REMOVE FRONT SHOE
5. REMOVE DRIVE CABLE AND REAR SHOE
6. REMOVE DRIVE CABLE FROM CABLE GUIDE CASING



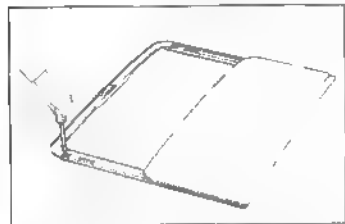


ASSEMBLY OF SUN ROOF

(See page BO-40)

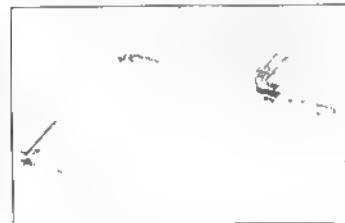
1. APPLY MP GREASE TO DRIVE CABLE
2. PLACE DRIVE CABLES INTO GUIDE CASING
3. INSTALL FRONT AND REAR SHOES ONTO ROOF PANEL

At this time just finger tighten the front shoe bolts. Tighten down the rear shoe bolts.

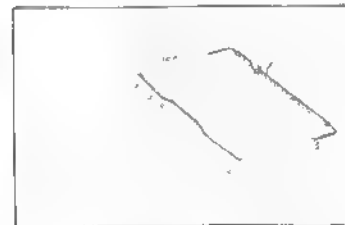


4. INSTALL GUIDE RAILS ON BOTH SIDES

- (a) Install both side guide rails through the rear and front shoes.
- (b) Install the guide rail and guide casing with screws.



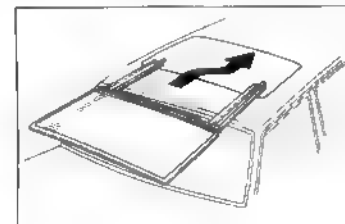
- (c) Use butyl tape to cover the cut portion of the weatherstrip at the connection between the guide case and guide rail.



5. ASSEMBLE SLIDING ROOF HEADLINING

- (a) Run the headlining through the guide rail.
- (b) Do not clip the headlining.

NOTE Securely install the headlining after adjustment of the sun roof



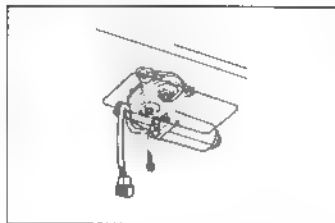
INSTALLATION OF SUN ROOF

1. INSTALL SLIDING ROOF WITH GUIDE RAIL ONTO



- (a) Install the sliding roof assembly onto the roof
- (b) Tighten the guide rail and cover with the screws.

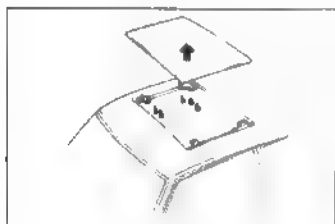
2. INSTALL WIND DEFLECTOR



3. INSTALL DRIVE MOTOR

- (a) Fully close the sliding roof manually and tighten down the front shoe bolts to where they make contact with the stopper on the rail side.
- (b) Install the drive motor to the roof
- (c) Install the center cover of the control box

4. ADJUST SLIDING ROOF OPERATION

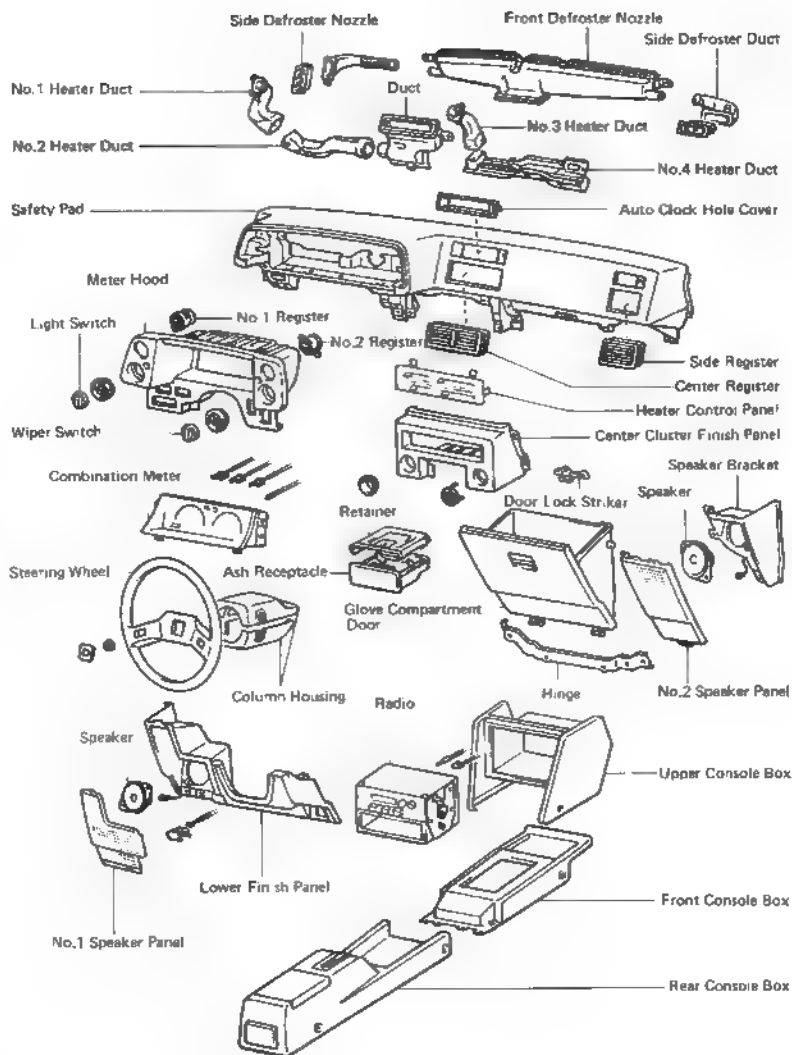


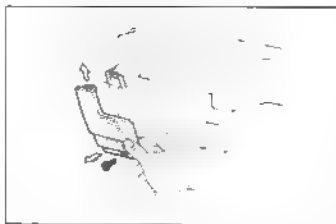
REMOVAL OF SLIDING ROOF PANEL

TO REMOVE ONLY SLIDING ROOF PANEL

- (a) Pull loose the clips and slide the headlining rearward.
- (b) Remove the front and rear shoe bolts.
- (c) Remove the roof panel

SAFETY PAD COMPONENTS



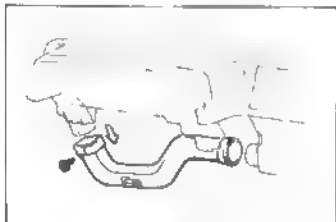
**REMOVAL OF SAFETY PAD**

(See page BO-46)

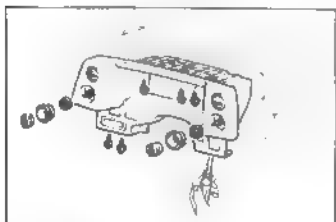
1. **REMOVE STEERING WHEEL**
2. **REMOVE NO. 1 SPEAKER PANEL**
 - (a) Remove the screw
 - (b) Pull loose the clip and remove the panel
3. **REMOVE ENGINE HOOD RELEASE LEVER**



4. **REMOVE LOWER FINISH PANEL**
 - (a) Remove the two bolts and three screws.
 - (b) Remove the finish panel with the speaker.

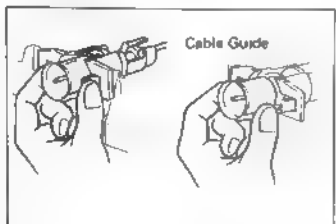


5. **REMOVE NO 2 HEATER DUCT**
Remove the screw and No. 2 heater duct.



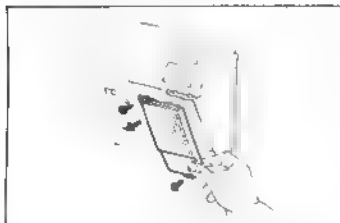
6. **REMOVE METER HOOD**
 - (a) Pull out the light and wiper switches.
 - (b) Remove the light and wiper switch mounting nuts.
 - (c) Remove the five screws and pull out the hood.

7. **REMOVE COMBINATION METER**
 - (a) Disconnect the connectors.
 - (b) Remove the four mounting screws and meter

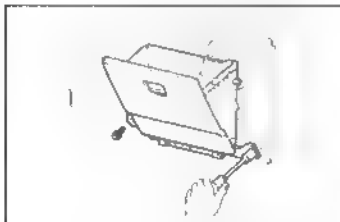


8. **REMOVE SPEEDOMETER CABLE**
 - (a) Push on the pawls on the right and left of the meter bracket
 - (b) Pull the meter bracket from the safety pad
- NOTE When reinstalling, first pull on the cable guide.

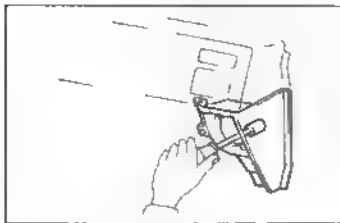
9. **REMOVE UPPER CONSOLE BOX**

**10. REMOVE NO. 2 SPEAKER PANEL**

Remove the two screws and speaker panel

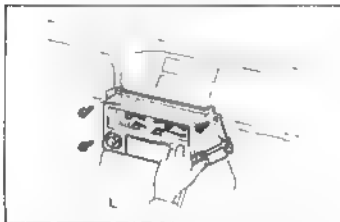
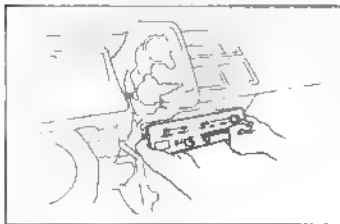
**11. REMOVE GLOVE COMPARTMENT DOOR**

Remove the two bolts and compartment door with the hinge.

12. REMOVE GLOVE COMPARTMENT DOOR LOCK STRIKER**13. REMOVE SPEAKER BRACKET**

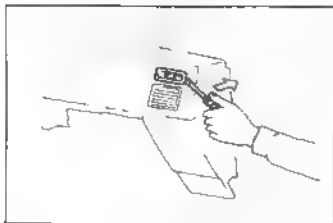
(a) Remove the screw

(b) Remove the bracket with the speaker

**14. REMOVE CENTER CLUSTER FINISH PANEL****15. REMOVE HEATER CONTROL PANEL**

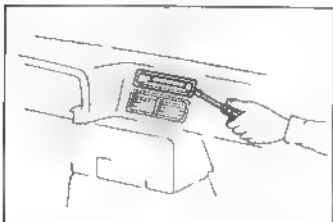
(a) Remove the four screws.

(b) Push on the pawls and remove the heater control panel from the safety panel

**16. REMOVE SIDE DEFROSTER NOZZLE**

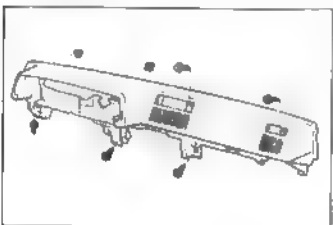
Using a screwdriver, pry between the defroster nozzle and safety pad.

CAUTION: Be careful not to scratch the safety pad.

**17. REMOVE AUTO CLOCK COVER**

Using a screwdriver, pry between the auto clock cover and safety pad.

CAUTION: Be careful not to scratch the safety pad.

**18. REMOVE SAFETY PAD**

(a) Remove the three bolts, two nuts and screws.

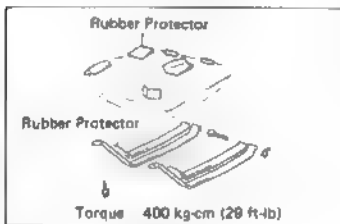
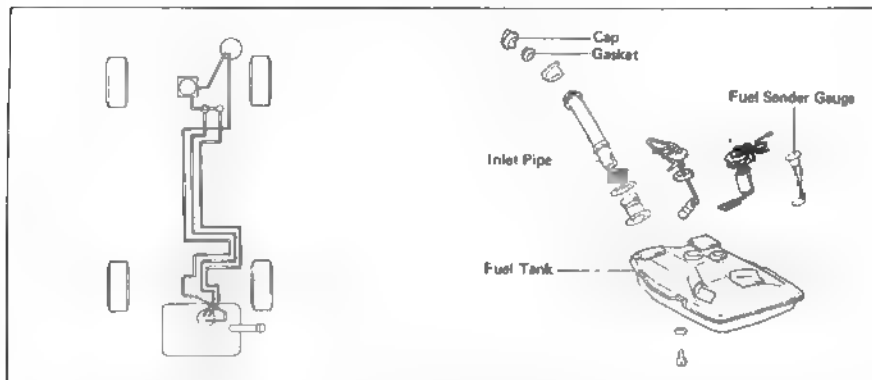
(b) Pull out the safety pad.

INSTALLATION OF SAFETY PAD

(See page 80-48)

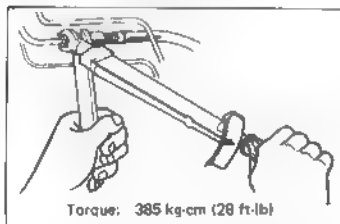
INSTALL SAFETY PAD IN REVERSE SEQUENCE OF REMOVAL

FUEL TANK AND LINE COMPONENTS



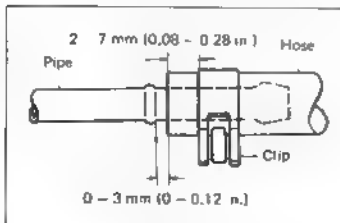
PRECAUTIONS

1. Always use new gaskets when replacing the fuel tank or component parts.
2. When re-installing, be sure to include the rubber protectors on the upper surfaces of the fuel tank and tank band.
3. Apply the proper torque to all tightening parts.



INSPECT FUEL LINES AND CONNECTIONS

- (a) Inspect the fuel lines and connections for cracks, leakage or deformation.
- (b) Inspect the fuel tank vapor vent system hoses and connections for looseness, sharp bends or damage.
- (c) Inspect the fuel tank for deformation, cracks, fuel leakage or tank band looseness.
- (d) Inspect the filler neck for damage or fuel leakage.



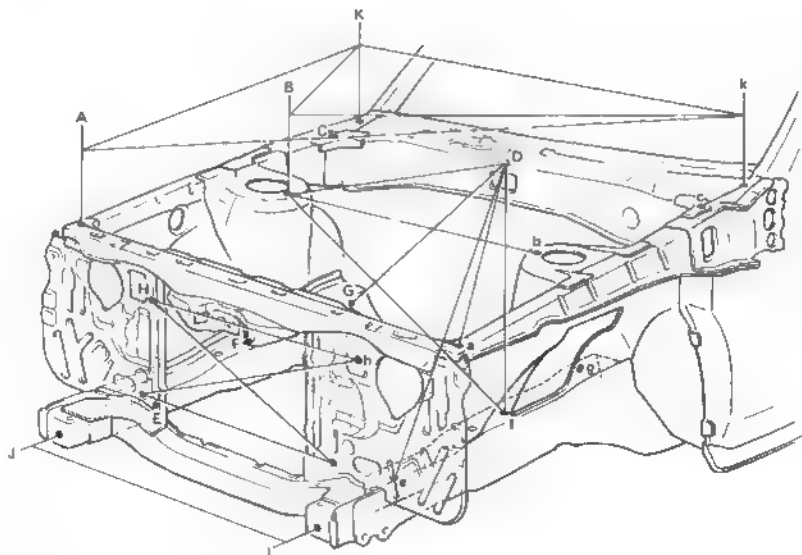
- (e) Hose and tube connections are as shown in the illustration.

If problem is found, repair or replace the parts as necessary

BODY DIMENSIONS

Symbol	Nomenclature	Hole dia.	Symbol	Nomenclature	Hole dia.
A, a	Fender front installation nut	6φ	P, p	Suspension member rear side lower installation hole	13φ
B, b	Front spring support inner hole	10φ	Q, q	Front floor under reinforcement standard hole	17φ
C, c	Fender rear installation nut	8φ	R, r	Front floor under reinforcement standard hole	15φ
D	Cowl top panel center mark	—	S, s	Lower control link bracket inner hole	12.5φ
E, e	Front side member standard hole	15φ	T, t	Rear floor side member standard hole	13φ
F, f	Suspension member rear side upper installation hole	15φ	U, u	Upper control link bracket inner hole	12.5φ
G, g	Front side member standard hole	11φ	V, v	Rear floor side member standard hole	11φ
H	Radiator support upper hole	nonagon	W, w	Rear floor side member standard hole	13φ
h	Radiator support upper hole	7φ	X	Upper back reinforcement center mark (2-Door Coupe)	3R
I, i	A/C condenser installation nut	6φ	Y	Back door opening frame center mark (3-Door Coupe)	2.5R
J, j	Front side member bumper installation nut	12φ	Z, z	Rear floor pin punch mark	2.5R
K, k	Cowl top side panel standard hole	11φ			
L, l	Front side member bumper installation hole	18φ			
M, m	Strut bar bracket front side inner installation nut	10φ			
N, n	Strut bar bracket rear side rear installation nut	10φ			
O, o	Suspension member front side lower installation hole	15φ			

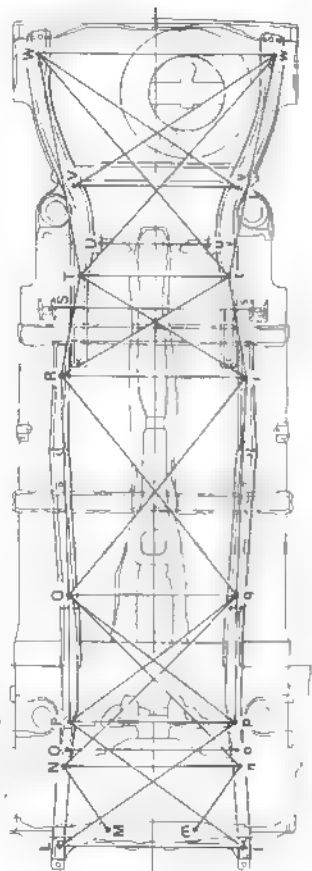
Engine Body Compartment



mm (in.)

A-a	A-K	A-k	B-b	B-D	B-f	B-K	B-k	D-a	D-e
1 250 (49.57)	944 (37.17)	1 819 (63.74)	890 (35.04)	510 (20.08)	915 (36.02)	502 (19.76)	1 214 (47.80)	981 (38.62)	940 (37.01)
D-f	D-G	H-h	H-l	I-h	I-l	J-j	K-k	c-k	
844 (25.35)	552 (21.73)	728 (28.66)	696 (27.40)	765 (30.12)	671 (26.42)	854 (33.62)	1,374 (54.09)	212 (8.35)	

Under Body



mm (in.)

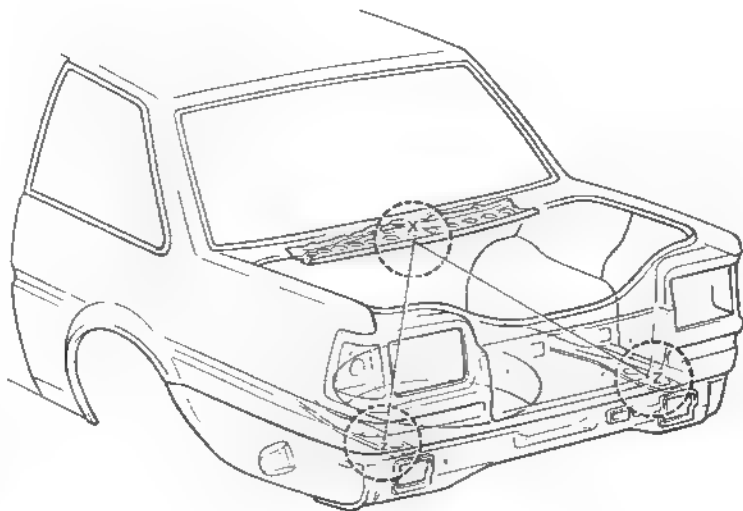
Point Symbol	Reference length mm (in.)
L - l	823 (32.40)
L - p	986 (38.82)
M - n	352 (13.86)
N - n	781 (30.75)
N - q	1118 (44.02)
n - Q	1117 (43.99)
O - o	778 (30.63)
P - p	781 (29.96)
P - q	982 (37.87)
p - Q	963 (37.91)
P - Q	587 (23.11)
p - q	588 (23.07)
Q - q	765 (30.12)
Q - R	994 (39.13)
q - r	1,280 (50.39)
Q - r	850 (33.46)
R - r	489 (19.25)
R - t	909 (35.79)
r - t	892 (35.12)
S - s	680 (27.17)
T - w	1,082 (42.59)
t - w	1,378 (54.29)
U - u	490 (19.29)
V - v	760 (29.92)
v - w	1,101 (43.35)
W - w	1,060 (41.73)

mm (in.)

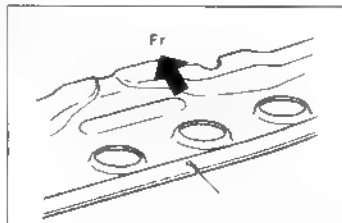
D - e

940
(37.01)

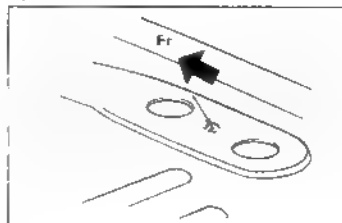
Luggage Compartment (2-Door Coupe)



X



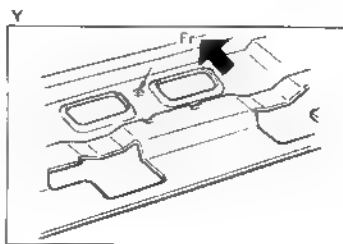
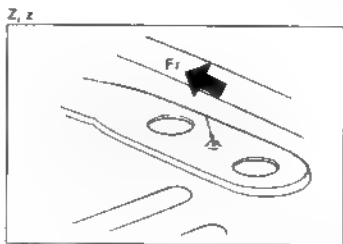
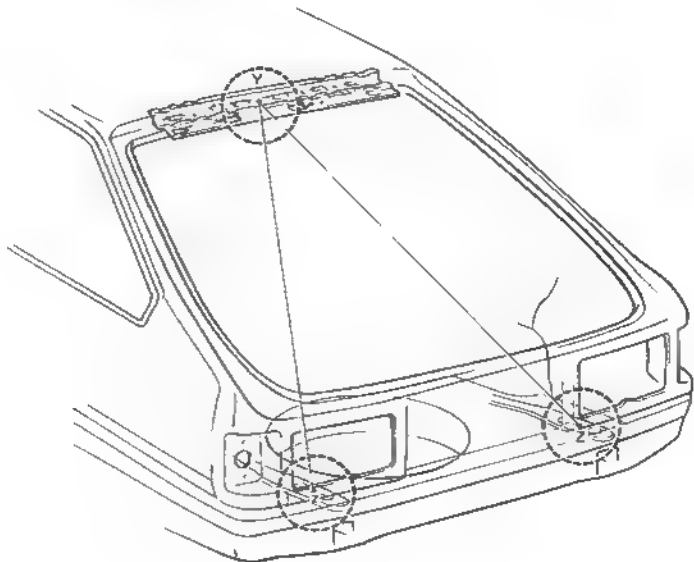
Z, z



NOTE: The luggage compartment measurement is performed between the two dot-marked points as shown in the figure above.

Point symbol	Reference length mm (in.)
X - Z	744 (29.29)
X - z	733 (28.86)

Luggage Compartment (3-Door Coupe)



NOTE: The luggage compartment measurement is performed between the two dot-marked points as shown in the figure above.

Paint symbol	Reference length mm (in)
Y - Z	1,360 (53.54)
Y z	1,354 (53.31)

AIR CONDITIONING SYSTEM

	Page
PRECAUTIONS	AC-2
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SPECIAL TOOLS AND EQUIPMENT	AC-8
AIR CONDITIONING SYSTEM CIRCUIT	AC-9
ON VEHICLE INSPECTION	AC-10
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Discharging of Refrigeration System	AC-12
Evacuating and Charging of Refrigeration System	AC-12
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COMPRESSOR	AC-18
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COOLING UNIT	AC-23
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Expansion Valve	AC-25
REFRIGERANT LINES	AC-27
A/C SWITCH	AC-27
THERMISTOR	AC-28
LOW PRESSURE SWITCH	AC-28
AIR CONDITIONER AMPLIFIER	AC-29
VACUUM SWITCHING VALVE (VSV)	AC-30

PRECAUTIONS

- The following precautions should be observed when handling refrigerant (R-12):
 - Always wear eye protection.
 - Keep the refrigerant container (service drum) below 40°C (104°F).
 - Do not handle refrigerant in an enclosed area where there is an open flame.
 - Discharge refrigerant slowly when purging the system.
 - Be careful that the liquid refrigerant does not get on your skin.
- If liquid refrigerant gets in the eyes or on the skin
 - Do not rub.
 - Wash the area with a lot of cool water.
 - Apply clean petroleum jelly to the skin.
 - Rush to a physician or hospital for immediate professional treatment.
 - Do not attempt to treat yourself.
- When tubing:
 - Apply a few drops of compressor oil to the seats of the O-ring fittings.
 - Use two wrenches to tighten the nuts to prevent twisting the tube.
 - Tighten the O-ring fitting to the specified torque.

Tightening torque for O-ring fittings

Fitting size	Torque
3/8 in. Tube	120–150 kg-cm (9–10 ft-lb)
1/2 in. Tube	200–250 kg-cm (15–18 ft-lb)
5/8 in. Tube	300–350 kg-cm (22–26 ft-lb)

TROUBLESHOOTING

Problem	Possible cause	Remedy	Page
No cooling or warm air	Magnetic clutch does not engage <ol style="list-style-type: none"> A/C fuse blown Magnetic clutch faulty A/C switch faulty Thermistor faulty A/C amplifier faulty Wiring or ground faulty Refrigerant empty Heater relay faulty Circuit breaker faulty Pressure switch faulty 	Replace fuse and check for short Check magnetic clutch Check switch Check thermistor Check amplifier Repair as necessary Check refrigerant pressure Check heater relay Check circuit breaker Check pressure switch	AC-10 AC-18 AC-27 AC-28 AC-29 AC-9 AC-11 AC-9 AC-9 AC-28
	Compressor does not rotate properly <ol style="list-style-type: none"> Drive belt loose or broken Compressor faulty 	Adjust or replace drive belt Check compressor	AC-10
	Expansion valve faulty	Check expansion valve	AC-25
	Leak in system	Test system for leaks	AC-13
	Fusible plug on receiver blown or clogged screen	Check receiver	AC-11

TROUBLESHOOTING (Cont'd)

Problem	Possible cause	Remedy	Page
No cooling or warm air (Cont'd)	Blower does not operate		
	(a) A/C fuse blown	Replace fuse and check for short	AC 10
	(b) A/C switch faulty	Check A/C switch	AC 27
	(c) Circuit breaker faulty	Check circuit breaker	AC 9
	(d) Heater relay faulty	Check heater relay	AC 9
	(e) Blower motor faulty	Check blower motor	
	(f) Wiring faulty	Repair as necessary	AC 9
Cool air comes out intermittently	Magnetic clutch slipping	Check magnetic clutch	AC 18
	Expansion valve faulty	Check expansion valve	AC 25
	Wiring connection faulty	Repair as necessary	AC 9
	Excessive moisture in system	Evacuate and charge system	AC 4, 12
Limited amount of cool air at high speed	Thermistor faulty	Check thermistor	AC 28
Cool air comes out only at high speed	Condenser clogged	Check condenser	AC 21
	Drive belt slipping	Check or replace drive belt	AC 10
	Compressor faulty	Check compressor	
	Insufficient or too much refrigerant	Check refrigerant charge	AC 6
	Air in system	Evacuate and charge system	AC 7, 12
Insufficient cooling	Condenser clogged	Check condenser	AC 21
	Drive belt slipping	Check or replace drive belt	AC 10
	Magnetic clutch faulty	Check magnetic clutch	AC 18
	Compressor faulty	Check compressor	
	Expansion valve faulty	Check expansion valve	AC 25
	Thermistor faulty	Check thermistor	AC 28
	Control amplifier faulty	Check amplifier	AC 28
	Insufficient or too much refrigerant	Check refrigerant charge	AC 6
	Air or excessive compressor oil in system	Evacuate and charge system	AC 4, 12
	Receiver clogged	Check receiver	AC 21
	Temperature control resistor faulty	Check resistor	AC 27
Insufficient velocity of cool air	Evaporator clogged or frosted	Clean evaporator fins or filters	AC 25
	Air leakage from cooling unit or air duct	Repair as necessary	AC 17
	Air inlet blocked	Repair as necessary	
	Blower motor faulty	Replace blower motor	AC 9

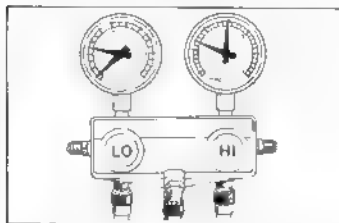
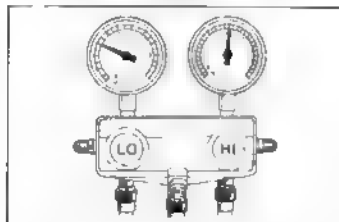
Checking of Refrigeration System with Manifold Gauge

This is a method in which the trouble is located by using a manifold gauge.

Read the manifold gauge pressure with the following established conditions.

- Temperature at the air inlet 30–35°C (86–95°F)
- Engine running at 2,000 rpm
- Blower speed set at high
- A/C switch ON
- Temperature control lever set at cool

NOTE: Gauge indications may vary slightly due to ambient temperature conditions.



1. NORMALLY FUNCTIONING REFRIGERATION

Gauge reading.

Low pressure side

1.5 -- 2.0 kg/cm² (21 -- 28 psi)

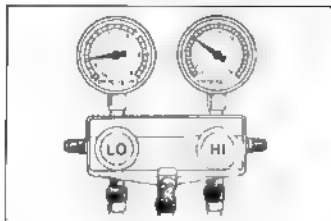
High pressure side

14.5 -- 15.0 kg/cm² (206 -- 213 psi)

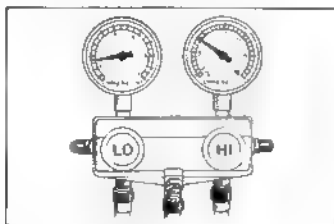
2. MOISTURE PRESENT IN REFRIGERATION SYSTEM

Condition: Periodically cools and then fails to cool

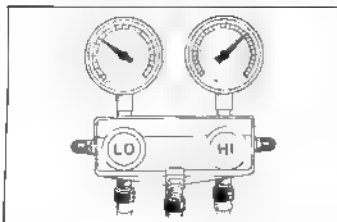
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
During operation pressure at low pressure side sometimes becomes a vacuum and sometimes normal	Moisture entered refrigeration system, freezes at expansion valve orifice and temporarily stops cycle but normal state is restored after a time when the ice melts	Drier is oversaturated state ↓ Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant	(1) Replace receiver and drier (2) Remove moisture in cycle through repeated vacuum purging. (3) Charge refrigerant to proper amount

**3. INSUFFICIENT REFRIGERANT****Condition:** Insufficient cooling

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressure low at both low and high pressure sides Bubbles seen in sight glass Insufficient cooling performance	Gas leakage some place in refrigeration system	Insufficient refrigerant in system ↓ Refrigerant leaking	(1) Check with leak tester and repair (2) Charge refrigerant to proper amount.

**4. POOR CIRCULATION OF REFRIGERANT****Condition:** Insufficient cooling

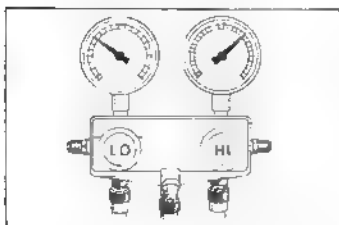
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressure low at both low and high pressure sides Frost on tubes from receiver to unit	Refrigerant flow obstructed by dirt in receiver	Receiver clogged	Replace receiver



5. REFRIGERANT OVERCHARGE OR INSUFFICIENT COOLING OF CONDENSER

Condition: Does not cool sufficiently

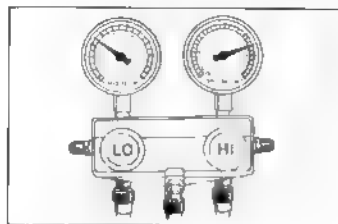
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressures too high at both low and high pressure sides	Unable to develop sufficient performance due to excessive refrigerant in system Condenser cooling insufficient	Excessive refrigerant in cycle → refrigerant overcharged Condenser cooling insufficient → condenser fins clogged or fan motor faulty	(1) Clean condenser (2) Check fan motor operation (3) If (1) and (2) are in normal state, check amount of refrigerant Note: Vent out refrigerant through gauge manifold low pressure side by gradually opening valve.



6. EXPANSION VALVE IMPROPERLY MOUNTED/ HEAT SENSING TUBE DEFECTIVE (OPENS TOO WIDE)

Condition: Insufficient cooling

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressures too high at both low and high pressure sides Frost or large amount of dew on piping at low pressure side	Trouble in expansion valve or heat sensing tube not installed correctly Refrigerant flow out of adjustment	Excessive refrigerant in low pressure piping ↓ Expansion valve opened too wide	(1) Check heat sensing tube installation. (2) If (1) is normal, test expansion valve in unit, and replace if defective

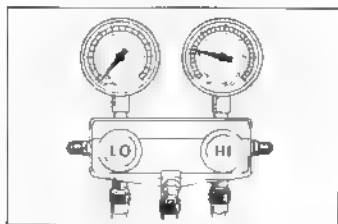


7. AIR PRESENT IN REFRIGERATION SYSTEM

Condition: Does not cool down sufficiently

NOTE: These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without vacuum purging.

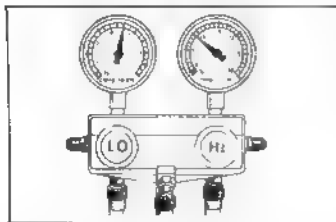
Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressures too high at both low and high pressure sides	Air entered refrigeration system	Air present in refrigerant on system ↓ Insufficient vacuum purging	(1) Replace receiver and drier (2) Check for dirty or insufficient compression oil (3) Vacuum purge and charge new refrigerant.



8. REFRIGERANT DOES NOT CIRCULATE

Condition: Does not cool (Cools from time to time in some cases)

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Vacuum indicated at low pressure side, very low pressure indicated at high pressure side Frost or dew seen on piping before and after receiver and drier or expansion valve	Refrigerant flow obstructed by moisture or dirt in refrigerant freezing or adhering to expansion valve orifice Refrigerant flow obstructed by gas leakage from expansion valve heat sensing tube	Expansion valve orifice clogged ↓ Refrigerant does not flow	Allow to stand for sometime and then restart operation to determine if trouble is caused by moisture or dirt If caused by moisture refer to step 2 on page AC-4. If caused by dirt, remove expansion valve and clean off dirt by blowing with air. If unable to remove dirt, replace valve Vacuum purge and charge new refrigerant to proper amount If gas leakage from heat sensing tube, replace expansion valve

**9. DEFECTIVE COMPRESSION COMPRESSOR**

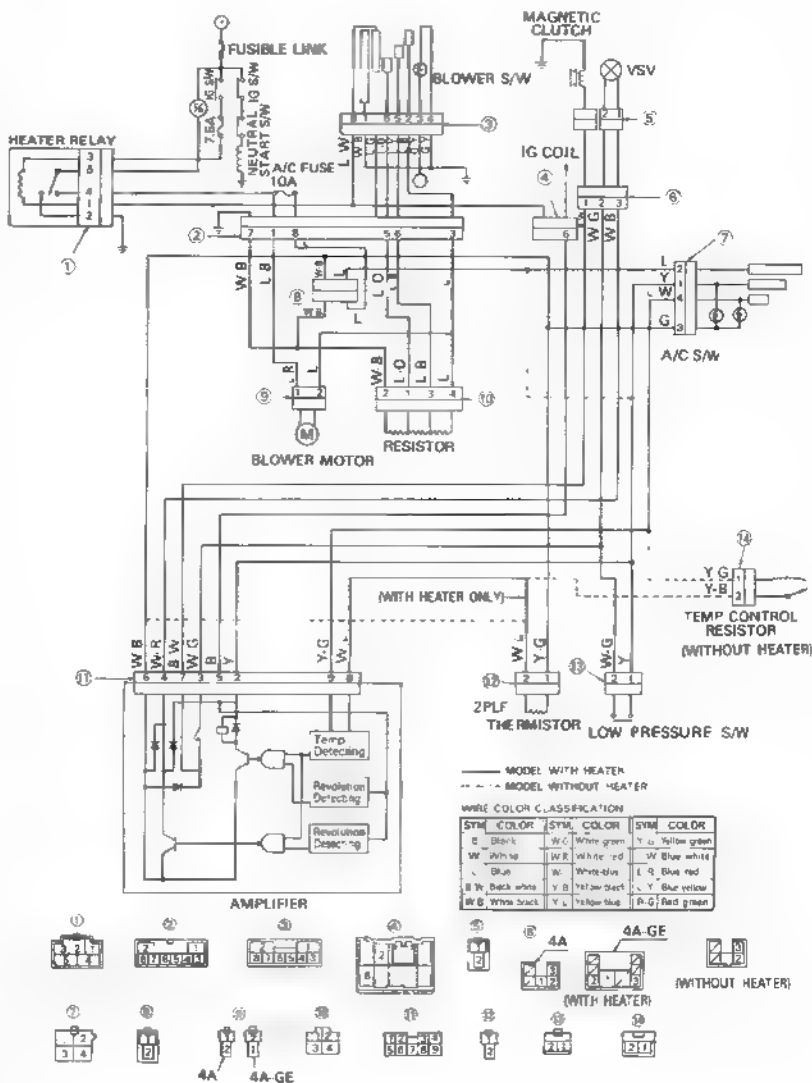
Condition: Does not cool

Symptom seen in refrigeration system	Probable cause	Diagnosis	Remedy
Pressure too high at low pressure side Pressure too low at high pressure side	Internal leak in compressor	Compression defective + (Valves sliding parts) (piston, cylinder, gasket, etc.)	Replace or repair compressor

SPECIAL TOOLS AND EQUIPMENT

Tool	SST No.	Use
Manifold gauge set	07110-78010	To evacuate and charge system
Ohmmeter		To electrical diagnosis
Testing nozzle	07116-71010	To test expansion valve

AIR CONDITIONING SYSTEM CIRCUIT



ON-VEHICLE INSPECTION

1. CHECK CONDENSER FINS FOR BLOCKAGE OR DAMAGE

If the fins are clogged, clean them with pressurized water.

CAUTION: Be careful not to damage the fins.

2. CHECK TENSION OF DRIVE BELTS

Drive belt tension at 10 kg (22.0 lb)

[4A engine]

New belt 7 – 9 mm (0.28 – 0.35 in.)

Used belt 9 – 12 mm (0.35 – 0.47 in.)

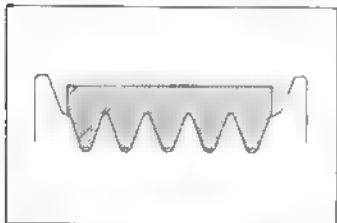
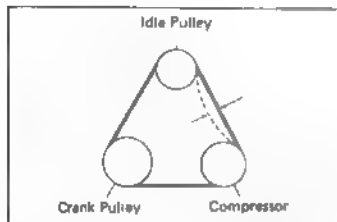
[4A-GE engine]

New belt 5.5 – 7 mm (0.22 – 0.28 in.)

Used belt 8 – 9.5 mm (0.31 – 0.37 in.)

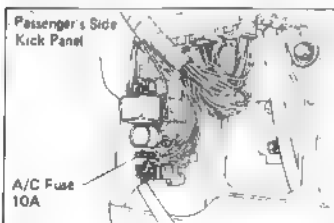
NOTE

- "New belt" refers to a brand new belt which has never before been used
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more



3. MAKE SURE DRIVE BELT IS INSTALLED CORRECTLY (4A-GE engine)

After installing the drive belt, check that it fits properly in the ribbed grooves.



4. START ENGINE

5. TURN ON A/C SWITCH

Check that the A/C operates at each position of the blower switch.

If blower does not operate, check A/C fuse

6. CHECK MAGNETIC CLUTCH OPERATION

7. CHECK THAT IDLE INCREASES

When the magnetic clutch engages, engine revolution should increase.

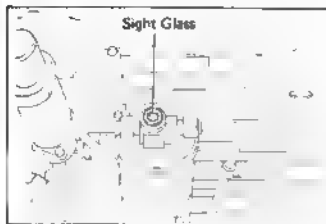
Standard idle up rpm: 900 – 1,000 rpm

8. CHECK AMOUNT OF REFRIGERANT

If you can see bubbles in the sight glass, additional refrigerant is needed. (See page AC-11)

9. IF NECESSARY, INSPECT FOR LEAKAGE

Using a gas leak tester, inspect each component of the refrigeration system. (See page AC 17)

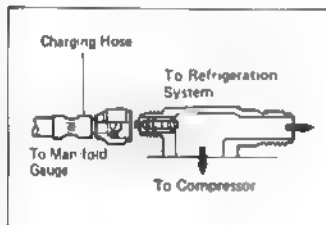


REFRIGERATION SYSTEM

Checking of Refrigerant Charge

1. RUN ENGINE AT FAST IDLE
2. OPERATE AIR CONDITIONER AT MAXIMUM COOLING FOR A FEW MINUTES
3. CHECK AMOUNT OF REFRIGERANT
Observe the sight glass on the receiver

Item	Symptom	Amount of refrigerant	Remedy
1	Bubbles present in sight glass	Insufficient	Check for leak with gas leak tester
2	No bubbles present in sight glass	None sufficient or too much	Refer to item 3 and 4
3	No temperature difference between compressor inlet and outlet	Empty or nearly empty	Evacuate and charge system. Then check for leak with gas leak tester
4	Temperature between compressor inlet and outlet is noticeably different	Proper or too much	Refer to item 5 and 6
5	Immediately after air conditioner is turned off, refrigerant in sight glass stays clear	Too much	Discharge excess refrigerant to specified amount
6	When air conditioner is turned off, refrigerant foams and then stays clear	Proper	



Installation of Manifold Gauge Set

NOTE Fittings for attaching the manifold gauge set are located on the compressor service valves.

1. CLOSE BOTH HAND VALVES OF MANIFOLD GAUGE SET
2. INSTALL CHARGING HOSES OF GAUGE SET TO SERVICE VALVES

Connect the low pressure hose to the suction service valve and the high pressure hose to the discharge service valve. Tighten the hose nuts by hand.

NOTE: Do not apply compressor oil to the seat of the connection.

Discharging of Refrigeration System

1. CONNECT MANIFOLD GAUGE SET TO COMPRESSOR
2. PLACE FREE END OF CENTER HOSE IN A SHOP TOWEL
3. DISCHARGE SYSTEM

(a) Slowly open the high pressure hand valve to adjust the refrigerant flow. Do not open the valve very much

CAUTION: If refrigerant is allowed to escape too fast, compressor oil will be drawn out of the system.

(b) Check the shop towel to make sure no oil is being discharged.

If oil is present, partially close the hand valve.

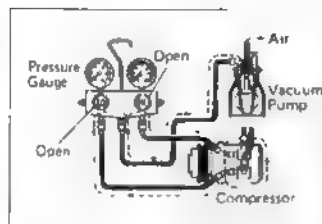
(c) After the manifold gauge reading drops below 3.5 kg/cm² (50 psi), slowly open the low pressure valve

(d) As the system pressure drops, gradually open both high and low valves until both gauges read 0 kg/cm² (0 psi)

Evacuating and Charging of Refrigeration System

NOTE

- Whenever the air conditioning system has been exposed to the atmosphere, it must be evacuated.
- After installation of a component, the system should be evacuated for approximately 15 minutes. A component in service that has been opened for repair should be evacuated for 30 minutes.



1. EVACUATE SYSTEM

- (a) Connect a manifold gauge set. (See page AC-11)
- (b) Install the center hose of the gauge set to the vacuum pump inlet
- (c) Run the vacuum pump, and then open both hand valves.
- (d) After about ten minutes, check that the low pressure gauge reads more than 600 mmHg (23.62 in. Hg) of

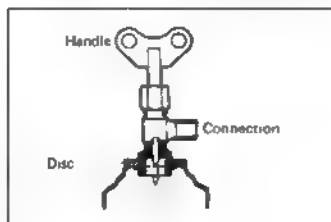
If the reading is not more than 600 mmHg (23.62 in. Hg), close both valves and stop the vacuum pump. Check the system for leaks and repair as necessary.

If no leaks are found, continue evacuating the system.

(e) After the low pressure gauge indicates more than 700 mmHg (27.56 in. Hg) of vacuum, continue evacuating for 15 minutes.

(f) Close both hand valves, and stop the vacuum pump. Disconnect the hose from the vacuum pump.

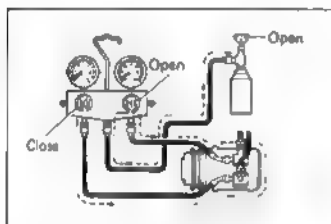
The system is now ready for charging.



2. INSTALL REFRIGERANT CAN TAP VALVE

CAUTION Observe the precautions listed in the front of this section.

- Before installing the valve on the refrigerant container, turn the handle counterclockwise until the valve needle is fully retracted.
- Turn the disc counterclockwise until it reaches its highest position.
Screw down the valve on the refrigerant container.
- Connect the center hose to the valve fitting. Turn the disc fully clockwise by hand.
- Turn the handle clockwise to make a hole in the sealed tap.
- Turn the handle fully counterclockwise to fill the center hose with gas. Do not open the high and low pressure valves.
- Loosen the center hose nut connected to the center fitting of the manifold gauge until a hiss can be heard. Allow air to escape for a few seconds, and then tighten the nut.



3. TEST SYSTEM FOR LEAKS

NOTE: After evacuating the system, check for leaks.

- install the refrigerant can tap valve as described in step 2.
- Open the high pressure valve to charge the system with refrigerant vapor.
- When the low pressure gauge reads 1 kg/cm^2 (14 psi), close the high pressure valve.
- Using a halide gas leak detector, propane torch, or electric leak detector, check the system for leaks.

If a leak is found, repair the faulty component or connection.

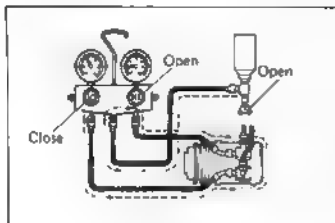
- After checking and repairing the system, perform the following:
 - Turn the can tap handle fully clockwise.
 - Disconnect the center hose from the can valve fitting.
 - Evacuate the system for at least 15 minutes. (See step 1 on page AC 12)

4. CHARGE EMPTY SYSTEM (LIQUID)

NOTE This step is to charge an empty system through the high pressure side with refrigerant in a liquid state. When the refrigerant container is held upside down, refrigerant will enter the system as a liquid.

CAUTION:

- Never run the engine when charging the system through the high pressure side.
- Do not open the low pressure valve when the system is being charged with liquid refrigerant.



- (a) Close both high and low pressure valves completely after the system is evacuated
- (b) Install the refrigerant can tap valve as described in step 2.
- (c) Open the high pressure valve fully, and keep the container upside down.
- (d) Charge the system with more than one can (400 g, 0.9 lb) to the specified amount. Then, close the high pressure valve.

Specified amount: 650 – 750g (1.4 – 1.7 lb)

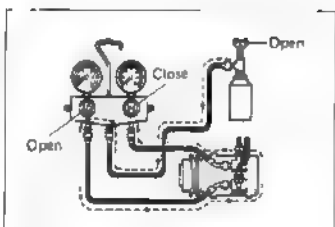
NOTE

- A fully charged system is indicated by the receiver sight glass being free of any bubbles.
- If the low pressure gauge does not show a reading, the system is clogged and must be repaired.

5. CHARGE EMPTY SYSTEM OR PARTIALLY CHARGED SYSTEM (VAPOR)

NOTE

- This step is to charge the system through the low pressure side with refrigerant in a vapor state. When the refrigerant container is placed rightside up, refrigerant will enter the system as a vapor.
- Put the refrigerant container in a pan of warm water (maximum temperature 40°C (104°F) to keep vapor pressure in the container slightly higher than vapor pressure in the system



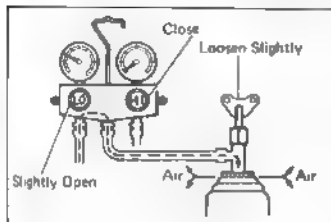
- (a) Install the refrigerant can tap valve as described in step 2
- (b) Open the low pressure valve. Adjust the valve so that the low pressure gauge does not read over 4.2 kg/cm² (60 psi)
- (c) Run the engine at fast idle, and operate the air conditioner

CAUTION Be sure to keep the container in the upright position to prevent liquid refrigerant being charged into the system through the suction side, resulting in possible damage to the compressor.

- (d) Charge the system with more than one container (400g, 0.9 lb) to the specified amount. Then, close the low pressure valve

Specified amount: 650 – 750g (1.4 – 1.7 lb)

NOTE: A fully charged system is indicated by the receiver sight glass being free of any bubbles.



6. IF NECESSARY, CHARGE SYSTEM WITH ANOTHER REFRIGERANT CONTAINER

- When the refrigerant container is empty, close the pressure valves.
- Remove the can tap valve from the container
- Attach the can tap valve to a new refrigerant container
- Purge the air from the center hose by slightly opening the low pressure valve and loosening the valve disc
- Make a hole in the sealed tap of the new container and charge the system.

CAUTION: Be careful not to overcharge the refrigerant as it may cause failure of the bearings and belt.

7. WHEN SYSTEM IS FULLY CHARGED, DISCONNECT MANIFOLD GAUGE SET

- Close both low and high pressure valves.
- Close the valve of the refrigerant container. If using one-pound container of R-12, allow remaining refrigerant to escape by slowly removing the charge line
- Turn off the engine
- Using a shop rag, quickly remove both hoses from the compressor service valves.

WARNING: Care must be taken to protect eyes and skin when removing the high pressure hoses.

- Put the cap nuts on the service valve fittings.

Performance Test

1. INSTALL MANIFOLD GAUGE SET

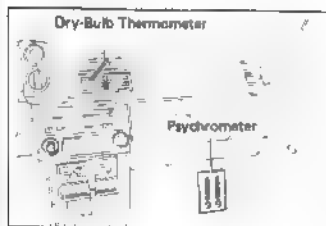
- Close the HI and LO hand valves.
- Connect the high pressure hose to the discharge service valve of the compressor
- Connect the low pressure hose to the suction service valve of the compressor

2. RUN ENGINE AND OPERATE AIR CONDITIONER

- Run the engine at 2,000 rpm
- Set the blower switch at HI, temperature control at COOL, and air flow control at VENT
- Keep all windows and doors open.

3. POSITION THERMOMETERS

- Place a dry bulb thermometer in the cool air out et.
- Place a psychrometer close to the inlet of the cooling unit.



4. WAIT UNTIL AIR CONDITIONING SYSTEM STABILIZES

- (a) Check that the reading on the high pressure gauge is 14.0 – 15.5 kg/cm² (199 – 220 psi)

If the reading is too high, pour water on the condenser. If the reading is too low, cover the front of the condenser.

- (b) Check that the reading on the dry-bulb thermometer at the air inlet is 25 – 35°C (77 – 95°F).

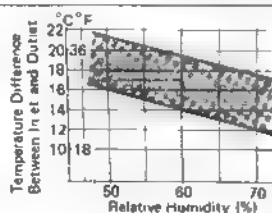
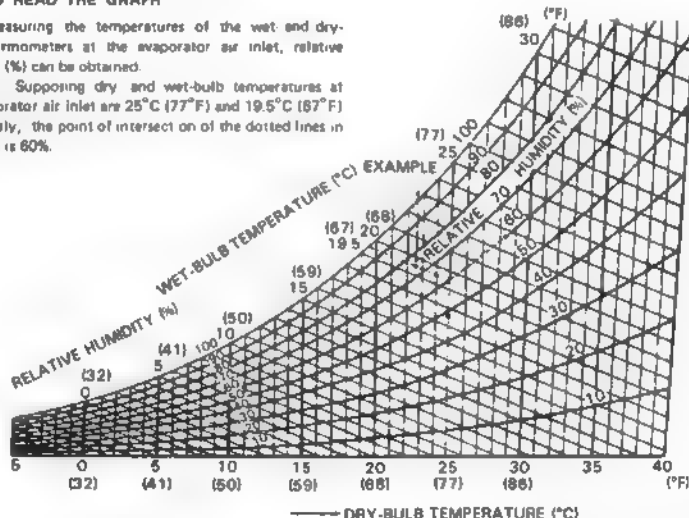
5. CHECK PERFORMANCE OF AIR CONDITIONING SYSTEM

- (a) Calculate the relative humidity from the psychrometric graph by comparing the wet- and dry-bulb readings of the psychrometer at the air inlet.

HOW TO READ THE GRAPH

After measuring the temperatures of the wet- and dry-bulb thermometers at the evaporator air inlet, relative humidity (%) can be obtained.

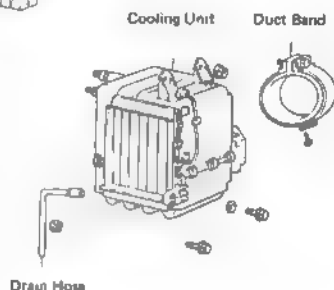
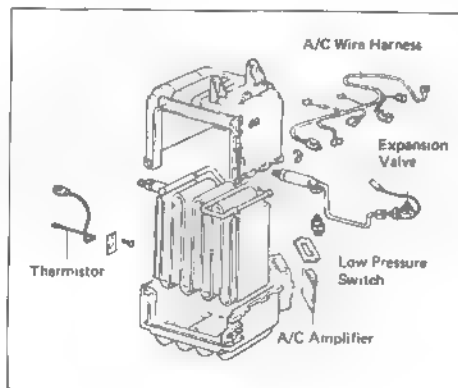
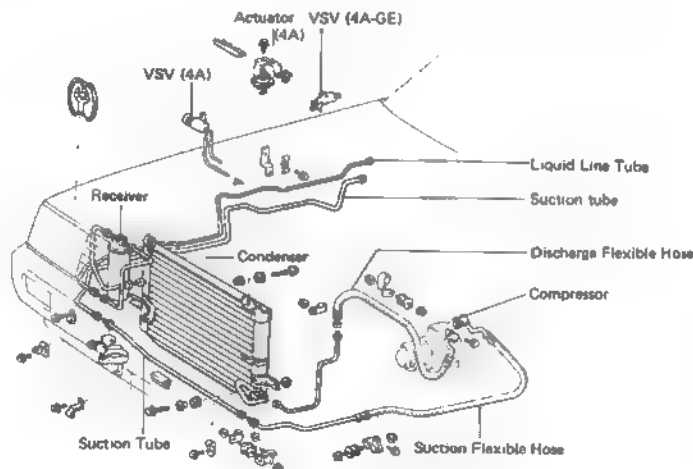
Example: Supposing dry- and wet-bulb temperatures at the evaporator air inlet are 25°C (77°F) and 19.5°C (67°F) respectively, the point of intersection of the dotted lines in the graph is 60%.

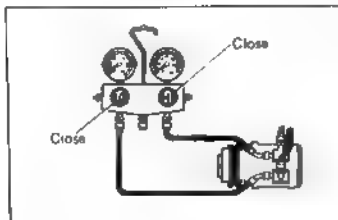


- (b) Measure the dry-bulb temperature at the cooler outlet, and calculate the difference between the inlet dry bulb and outlet dry-bulb temperatures.
- (c) Check that the intersection of the relative humidity and temperature difference is between the two hatched lines.

If the intersection is within the two lines, cooling performance is satisfactory.

SYSTEM COMPONENTS





COMPRESSOR

ON-VEHICLE INSPECTION

1. INSTALL MANIFOLD GAUGE SET

- Close the HI and LO hand valves
- Connect the high pressure hose to the discharge service valve of the compressor
- Connect the low pressure hose to the suction service valve of the compressor.

2. RUN ENGINE AT FAST IDLE

3. CHECK COMPRESSOR FOR FOLLOWING:

- High pressure gauge reading is not low and low pressure gauge reading is not higher than normal
- Metallic sound
- Leakage from shaft seal

If defects are found, repair the compressor.

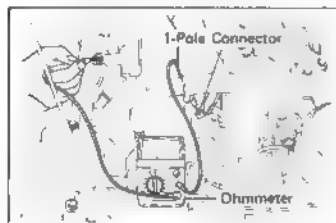
4. CHECK MAGNETIC CLUTCH

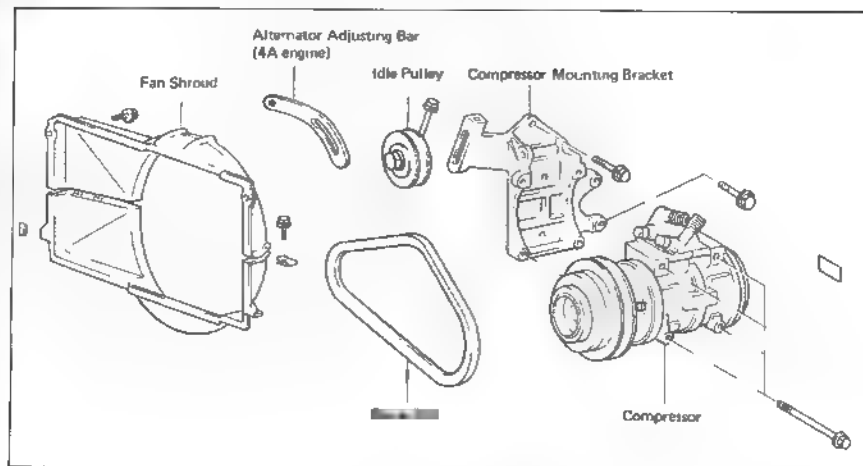
- Inspect the pressure plate and the rotor for signs of oil
- Check the clutch bearings for noise and grease leakage.

- Using an ohmmeter, measure the resistance of the stator coil between the clutch lead wire and ground.

If the resistance is not within tolerance, replace the coil.

Standard resistance: at 20°C (88°F)
 $3.7 \pm 0.2 \Omega$





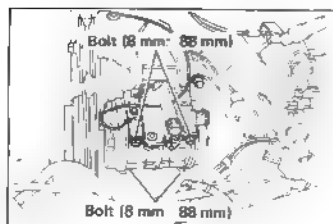
REMOVAL OF COMPRESSOR

1. RUN ENGINE AT IDLE FOR 10 MINUTES WITH AIR CONDITIONING ON
2. DISCONNECT NEGATIVE CABLE FROM BATTERY
3. DISCONNECT CLUTCH LEAD WIRE FROM WIRING HARNESS
4. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM (See page AC-12)
5. DISCONNECT TWO FLEXIBLE HOSES FROM COMPRESSOR SERVICE VALVES

Cap the open fitting immediately to keep moisture out of the system

6. REMOVE COMPRESSOR

- (a) Remove the fan shroud.
- (b) Loosen the drive belt.
- (c) Remove the compressor mounting bolts and the compressor



INSTALLATION OF COMPRESSOR

(See page AC-19)

1. INSTALL COMPRESSOR WITH THREE MOUNTING**2. INSTALL DRIVE BELT**

- Install the drive belt to the pulley.
- Tighten the belt with the adjusting bolts.

Drive belt tension at 10 kg (22.0 lb)

[4A engine]

New belt 7 - 9 mm (0.28 - 0.35 in.)
 Used belt 8 - 12 mm (0.35 - 0.47 in.)

[4A-GE engine]

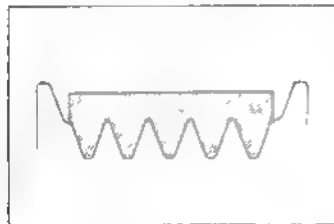
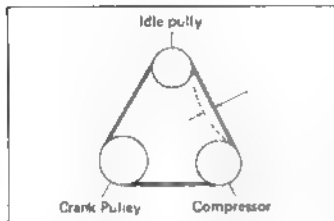
New belt 5.5 - 7 mm (0.22 - 0.28 in.)
 Used belt 8 - 9.5 mm (0.31 - 0.37 in.)

NOTE

- "New belt" refers to a brand new belt which has never before been used
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more

3. MAKE SURE DRIVE BELT IS INSTALLED CORRECTLY (4A-GE engine)

After installing the drive belt, check that it fits properly in the ribbed grooves

**4. CONNECT TWO FLEXIBLE HOSES TO COMPRESSOR SERVICE VALVES**

Torque: Discharge line 200 - 250 kg-cm
 (15 - 18 ft-lb)
 Suction line 300 - 350 kg-cm
 (22 - 25 ft-lb)

5. CONNECT CLUTCH LEAD WIRE TO WIRING HARNESS**6. CONNECT NEGATIVE CABLE TO BATTERY****7. EVACUATE AND CHARGE AIR CONDITIONING SYSTEM (See page AC-12)**

CONDENSER

ON-VEHICLE INSPECTION

1. CHECK CONDENSER FINS FOR BLOCKAGE OR DAMAGE

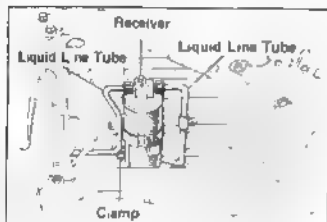
If the fins are clogged, wash them with water and dry with compressed air.

CAUTION: Be careful not to damage the fins.

If the fins are bent, straighten them with a screwdriver or pliers.

2. CHECK CONDENSER FITTINGS FOR LEAKAGE

Repair as necessary



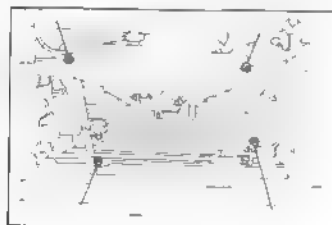
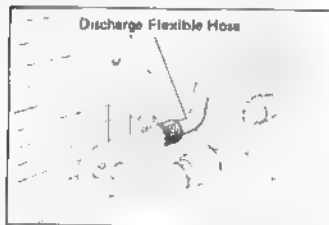
REMOVAL OF CONDENSER

(See page AC-17)

1. DISCHARGE AIR CONDITIONING SYSTEM
(See page AC-12)
2. REMOVE FRONT GRILLE, ENGINE LOWER COVER AND HOOD LOCK BRACE
3. DISCONNECT DISCHARGE FLEXIBLE HOSE FROM CONDENSER INLET FITTING
4. DISCONNECT LIQUID LINE TUBE FROM CONDENSER OUTLET FITTING

NOTE: Cap the open fittings immediately to keep moisture out of the system

5. REMOVE RECEIVER
6. REMOVE CONDENSER
Remove the four bolts.



INSTALLATION OF CONDENSER

(See page AC-17)

1. INSTALL CONDENSER
Install the four bolts, making sure the rubber cushions fit on the mounting flanges correctly
2. CONNECT LIQUID LINE TUBE AND DISCHARGE FLEXIBLE HOSE TO CONDENSER
Torque:
Liquid line tube 120–160 kg-cm (9–10 ft-lb)
Discharge flexible hose 200–250 kg-cm (15–18 ft-lb)
3. INSTALL FRONT GRILLE, ENGINE LOWER COVER AND HOOD LOCK BRACE
4. IF CONDENSER WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR
Add 40 – 50 cc (1.4 – 1.7 oz)
5. EVACUATE, CHARGE AND TEST AIR CONDITIONING SYSTEM (See page AC-12)

RECEIVER

ON-VEHICLE INSPECTION

CHECK SIGHT GLASS, FUSIBLE PLUG AND FITTINGS FOR LEAKAGE

Use a gas leak tester. Repair as necessary

REMOVAL OF RECEIVER

(See page AC-17)

1. DISCHARGE AIR CONDITIONING SYSTEM
(See page AC-12)

2. DISCONNECT TWO LIQUID LINE TUBES FROM RECEIVER

NOTE: Cap the open fittings immediately to keep moisture out of the system

3. REMOVE RECEIVER FROM RECEIVER HOLDER

INSTALLATION OF RECEIVER

(See page AC-17)

1. INSTALL RECEIVER IN RECEIVER HOLDER

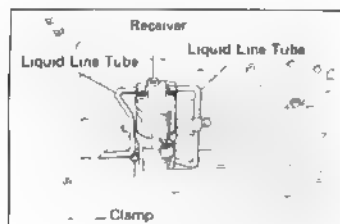
NOTE: Do not remove the blind plugs until ready for connection.

2. CONNECT TWO LIQUID LINE TUBES TO RECEIVER
Torque: 120 - 150 kg-cm (9 - 10 ft-lb)

3. IF RECEIVER WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR

Add 20 cc (0.7 oz)

4. EVACUATE, CHARGE AND TEST AIR CONDITIONING SYSTEM (See page AC-12)



COOLING UNIT

ON-VEHICLE INSPECTION OF EXPANSION VALVE

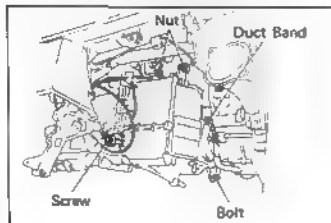
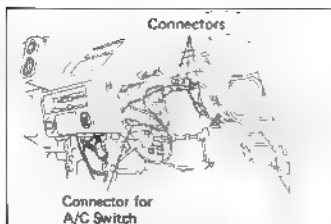
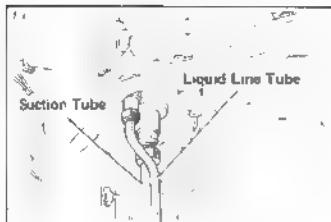
1. CONNECT MANIFOLD GAUGE TO COMPRESSOR

2. CHECK EXPANSION VALVE OPERATION

- (a) Run the engine at fast idle with the air conditioning on.
- (b) Check that the low pressure reading is between 0.5 – 5.0 kg/cm² (7 – 71 psi).

If the reading is too low, check and replace the expansion valve and/or receiver.

If the reading is too high, tighten the heat sensing tube and/or replace the expansion valve.



REMOVAL OF COOLING UNIT

1. DISCONNECT NEGATIVE CABLE FROM BATTERY

2. DISCHARGE AIR CONDITIONING SYSTEM (See page AC-12)

3. DISCONNECT SUCTION TUBE FROM COOLING UNIT OUTLET FITTING

4. DISCONNECT LIQUID LINE TUBE FROM COOLING UNIT INLET FITTING

NOTE: Cap the open fittings immediately to keep moisture out of the system

5. REMOVE GROMMETS FROM INLET AND OUTLET FITTINGS

6. REMOVE FOLLOWING COMPONENTS:

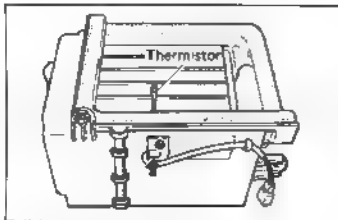
Glove box and undercover

7. DISCONNECT CONNECTORS

- (a) Disconnect the A/C switch connector
- (b) Disconnect the three connectors.

8. REMOVE COOLING UNIT

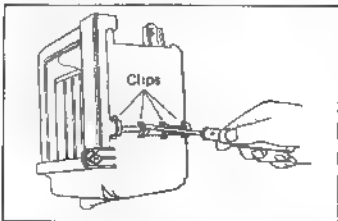
Remove the two nuts and four bolts.



DISASSEMBLY OF COOLING UNIT

1. REMOVE THERMISTOR

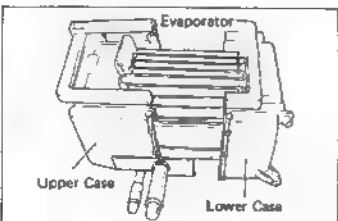
Unscrew the tapping screws.



2. REMOVE UPPER AND LOWER CASES FROM EVAPORATOR

(a) Remove the clamps and two screws.

(b) Remove upper and lower cases from the evaporator



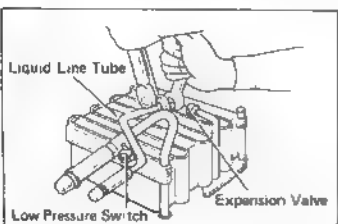
3. REMOVE COMPONENTS FROM EVAPORATOR

(a) Remove the packing and the clamp from the outlet tube of the evaporator

(b) Disconnect the liquid line tube from the inlet fitting of the expansion valve.

(c) Disconnect the expansion valve from the inlet fitting of the evaporator

(d) Remove the pressure switch, if necessary



Evaporator

INSPECTION OF EVAPORATOR

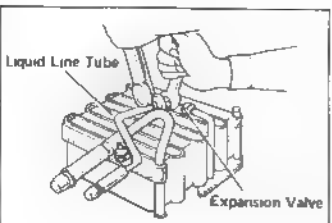
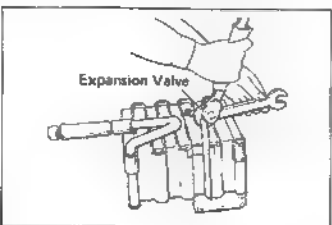
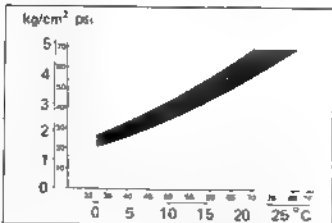
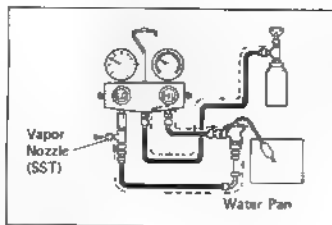
1. CHECK EVAPORATOR FINS FOR BLOCKAGE

If the fins are clogged, clean them with compressed air.

CAUTION: Never use water to clean the evaporator.

2. CHECK FITTINGS FOR CRACKS OR SCRATCHES

Repair as necessary



Expansion Valve

INSPECTION OF EXPANSION VALVE

1. CONNECT MANIFOLD GAUGE

Connect the manifold gauge set to the expansion valve, testing nozzle (SST) and refrigerant container as shown

SST 07115-71010

2. CHECK EXPANSION VALVE

- Close both manifold gauge hand valves.
- Pierce the refrigerant container to release the pressure
- Open the high pressure hand valve and adjust the high side pressure to approximately 5 kg/cm² (71 psi).
- Dip the heat sensing tube of the expansion valve in a pan of water. While varying the temperature of the water, read the low pressure gauge and, at the same time, measure the temperature of the water with a thermometer.
- Compare the two readings on the chart.

If the intersection is not between the two lines, replace the expansion valve.

ASSEMBLY OF COOLING UNIT

1. INSTALL COMPONENTS ON EVAPORATOR

- Connect the expansion valve to the inlet fitting of the evaporator. Torque the nut.

Torque: 300 - 350 kg-cm (22 - 25 ft-lb)

- Connect the liquid line tube to the inlet fitting of the expansion valve. Torque the nut.

Torque: 120 - 150 kg-cm (9 - 10 ft-lb)

- Install the pressure switch, if removed

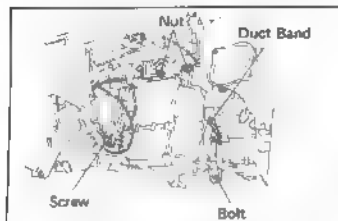
Torque: 120 - 150 kg-cm (9 - 10 ft-lb)

- Using the clamp, install the heat sensing tube.

- Install the packing.

2. INSTALL UPPER AND LOWER CASES ON THE EVAPORATOR

3. INSTALL COVER AND THERMISTOR

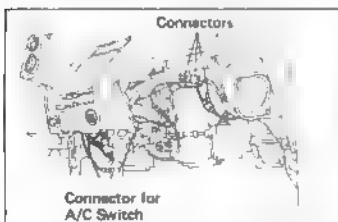


INSTALLATION OF COOLING UNIT

1. INSTALL COOLING UNIT

Install the cooling unit with two nuts, a screw and a bolt.

CAUTION: Be careful not to pinch the wiring harness while installing the cooling unit.



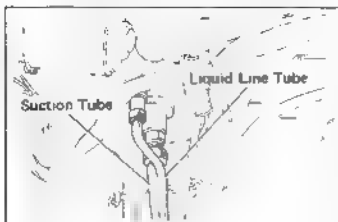
2. CONNECT CONNECTORS

- (a) Connect the three connectors.
- (b) Connect the A/C switch connector.

3. INSTALL FOLLOWING COMPONENTS:

- (a) Side air duct
- (b) Glove box assembly

4. INSTALL GROMMETS ON INLET AND OUTLET FITTINGS



5. CONNECT LIQUID LINE TUBE TO COOLING UNIT INLET FITTING

6. CONNECT SUCTION TUBE TO COOLING UNIT OUTLET FITTING

7. IF EVAPORATOR WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR

Add 40 – 50 cc (1.4 – 1.7 oz)

8. CONNECT NEGATIVE CABLE TO BATTERY

9. EVACUATE, CHARGE AND TEST AIR CONDITIONING SYSTEM (See page AC-12)

REFRIGERANT LINES

ON VEHICLE INSPECTION

- 1. INSPECT HOSES AND TUBES FOR LEAKAGE**
Use a gas leak tester. Replace, if necessary
- 2. CHECK THAT HOSE AND TUBE CLAMPS ARE NOT LOOSE**
Tighten or replace as necessary

REPLACEMENT OF REFRIGERANT LINES

(See page AC-17)

- 1. DISCHARGE AIR CONDITIONING SYSTEM**
(See page AC-12)

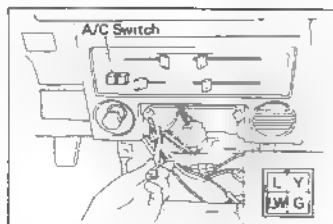
- 2. REPLACE FAULTY TUBE OR HOSE**

NOTE: Cap the open fittings immediately to keep moisture out of the system

Tightening torque for O-ring fittings

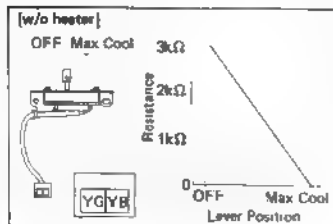
Fitting size	Torque
3/8 in. tube for liquid line	120 150 kg-cm (8 - 10 ft-lb)
1/2 in. tube for discharge line	200 - 250 kg-cm (15 - 18 ft-lb)
5/8 in. tube for suction line	300 350 kg-cm (22 - 25 ft-lb)

- 3. EVACUATE, CHARGE AND TEST AIR CONDITIONING SYSTEM** (See page AC-12)



[w/ heater]

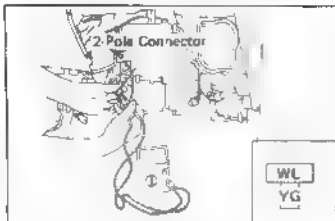
Terminal	L	Y	LW	G
Switch Position				
OFF				
A/C				
Temp				



A/C SWITCH

ON-VEHICLE INSPECTION

- 1. DISCONNECT NEGATIVE CABLE FROM BATTERY**
- 2. REMOVE CENTER CLUSTER AND COVERS**
- 3. DISCONNECT A/C SWITCH (TEMP CONTROL RESISTOR) CONNECTOR**
- 4. CHECK A/C SWITCH FOR CONTINUITY**
Using an ohmmeter, check continuity between the terminals for each switch position shown in the table.
If there is no continuity, replace the A/C switch
- 5. CONNECT A/C SWITCH CONNECTOR**
- 6. INSTALL CENTER CLUSTER AND COVERS**
- 7. CONNECT NEGATIVE CABLE TO BATTERY**



THERMISTOR

(See page AC-17)

REMOVAL OF THERMISTOR

1. DISCONNECT NEGATIVE CABLE FROM BATTERY
2. REMOVE GLOVE BOX AND UNDERCOVER
3. REMOVE THERMISTOR
 - (a) Disconnect connector
 - (b) Remove screw and thermistor from cooling unit.

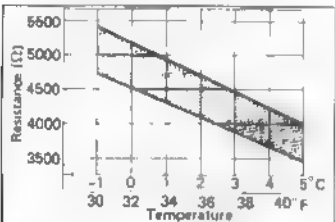
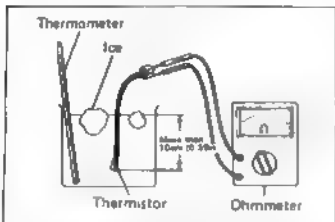
INSPECTION OF THERMISTOR

CHECK THERMISTOR OPERATION

- (a) Place the thermistor in cold water. While varying the temperature of the water, measure the resistance at the connector and, at the same time, measure the temperature of the water with a thermometer.

- (b) Compare the two readings on the chart

If the intersection is not between the two lines, replace the thermistor



INSTALLATION OF THERMISTOR

1. INSTALL THERMISTOR
 - (a) Install thermistor with a screw
 - (b) Connect connector.
2. INSTALL GLOVE BOX AND UNDERCOVER
3. CONNECT NEGATIVE CABLE TO BATTERY

LOW PRESSURE SWITCH

(See page AC-17)

INSPECTION OF LOW PRESSURE SWITCH

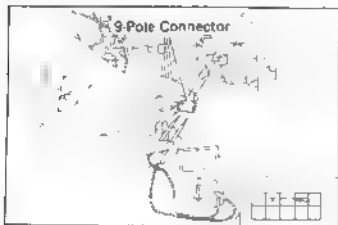
1. CHECK REFRIGERANT PRESSURE

- (a) Connect the hoses of the manifold gauge set to the compressor service valves and observe the gauge reading.
- (b) The gauge reading must be more than 2.1 kg/cm² (30 psi) when the ambient temperature is higher than 0°C (32°F)

If the pressure is less than 2.1 kg/cm² (30 psi), charge with refrigerant (See page AC-12)

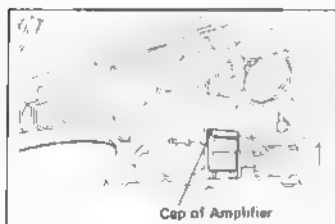
2. CHECK PRESSURE SWITCH

- (a) Remove the glove box and the undercover
- (b) Disconnect the lead wires of the amplifier
- (c) Using an ohmmeter, check the continuity between the two terminals of the low pressure switch. The ohmmeter must indicate zero ohm



If there is no continuity, replace the low pressure switch.
(See page AC-24)

3. REINSTALL REMOVED PARTS IN REVERSE ORDER



AIR CONDITIONER AMPLIFIER

(See page AC-17)

INSPECTION OF AIR CONDITIONER AMPLIFIER

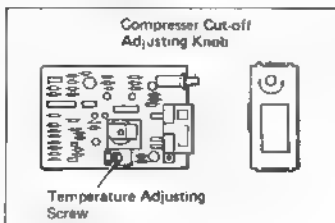
1. CHECK ENGINE SPEED DETECTING CIRCUIT

- Run the engine, and operate the air conditioner
- Check that the magnetic clutch disengages at the specific engine revolution

Cut-off rpm: 600 - 700 rpm

If the cut-off rpm is too high, turn the rpm knob clockwise to adjust

If the cut-off rpm is too low, turn the rpm knob counterclockwise to adjust



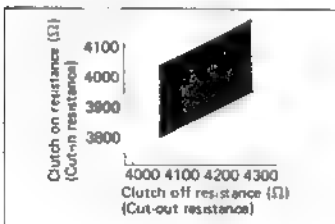
2. CHECK TEMPERATURE DETECTING CIRCUIT

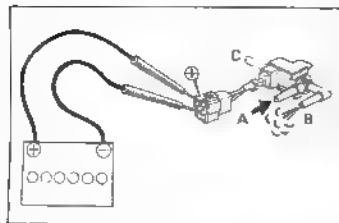
- Remove the glove box.
- Disconnect the thermistor connector and connect variable resistor
- Run the engine and operate the air conditioner to get maximum cooling.
 - Air intake control: RECIRC
 - Air flow control: VENT
 - Temperature control: COOL
 - Blower control: HI
- Measure the resistance of the variable resistor when the magnetic clutch engages and disengages.

If the resistance is not between the two lines, adjust the amplifier

If the resistance is too high, turn the TEMP setting resistor clockwise.

If the resistance is too low or the evaporator is frosted, turn the TEMP setting resistor counterclockwise until the magnetic clutch engages at the standard resistance.





VACUUM SWITCHING VALVE (VSV) (4A Engine)

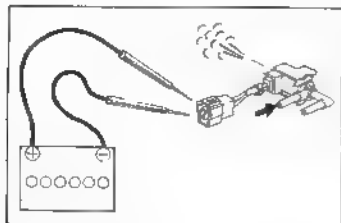
(See page AC-17)

INSPECTION OF VACUUM SWITCHING VALVE

1. CHECK VACUUM CIRCUIT CONTINUITY IN VSV BY BLOWING AIR INTO PIPES

- Connect the VSV terminals to the battery terminals as illustrated.
- Blow into pipe "A" and check that air comes out of pipe "B".
- Disconnect the battery.
- Blow into pipe "A" and check that air comes out of filter "C".

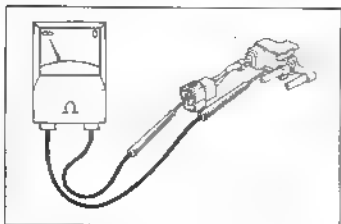
If a problem is found, repair or replace the VSV.



2. CHECK FOR SHORT CIRCUIT

Using an ohmmeter, check that there is no continuity between each terminal and the VSV body.

If there is continuity, replace the VSV.

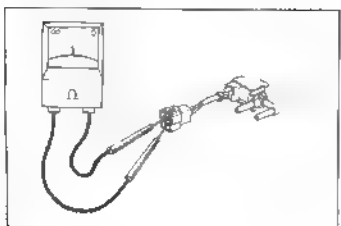


3. CHECK FOR OPEN CIRCUIT

Using an ohmmeter, measure the resistance between the positive (+) terminal and the other terminals.

Resistance: at 20°C (68°F)
38 – 44 Ω

If resistance is not within specification, replace the VSV.



VACUUM SWITCHING VALVE (VSV) (4A-GE Engine)

(See page AC-17)

INSPECTION OF VACUUM SWITCHING VALVE

1. CHECK VACUUM CIRCUIT CONTINUITY IN VSV BY BLOWING AIR INTO PIPES

- Connect the VSV terminals to the battery terminals as illustrated.
- Blow into pipe "A" and check that air comes out of pipe "B".
- Disconnect the battery.
- Blow into pipe "A" and check that air does not come out of pipe "B".

If a problem is found, repair or replace the VSV

2. CHECK FOR SHORT CIRCUIT

Using an ohmmeter, check that there is no continuity between each terminal and the VSV body.

If there is continuity, replace the VSV.

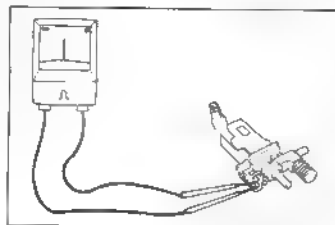
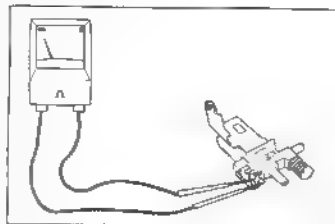
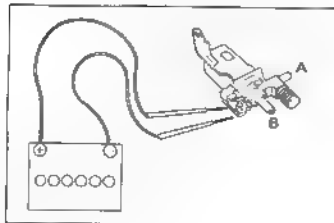
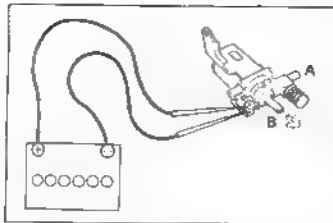
3. CHECK FOR OPEN CIRCUIT

Using an ohmmeter, measure the resistance between the positive (+) terminal and the other terminals.

Resistance: at 20°C (68°F)

24 — 30 Ω

If resistance is not within specification, replace the VSV



SERVICE SPECIFICATIONS

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CLUTCH**Specifications**

Pedal height (from asphalt sheet)	LHD	161 — 171 mm	6.34 — 6.73 in.
	RHD	162 — 172 mm	6.38 — 6.77 in.
Push rod play at pedal top		1.0 — 5.0 mm	0.039 — 0.197 in.
Pedal freeplay		13 — 23 mm	0.51 — 0.91 in.
Release fork end play		None adjustable type	
Disc rivet head depth	Limit	0.3 mm	0.012 in.
Disc runout	Limit	0.8 mm	0.031 in.
Diaphragm spring out of alignment	Limit	0.6 mm	0.020 in.
Diaphragm spring finger wear	Depth	Limit	0.6 mm
	Width	Limit	5.0 mm
Flywheel runout	Limit	0.2 mm	0.008 in.

Tightening Torque

Tightening part	kg-cm	ft-lb
Clutch cover x Flywheel	195	14
Master cylinder set bolt	130	9
Release cylinder set bolt	130	9
Clutch pedal setting nut (LHD) or bolt (RHD)	375	27
Clutch tube union nut	155	11
Flexible hose	235	17

MANUAL TRANSMISSION**Specifications**

Manual transmission (T50)	Output shaft			
	2nd and 3rd gear journal diameter	Limit	37.8 mm	1.488 in.
	Flange thickness	Limit	4.0 mm	0.157 in.
	Runout	Limit	0.06 mm	0.0024 in.
Gear thrust clearance	1st	STD	0.150 — 0.275 mm	0.0059 — 0.0108 in.
		Limit	0.5 mm	0.020 in.
	2nd	STD	0.150 — 0.250 mm	0.0059 — 0.0098 in.
		Limit	0.5 mm	0.020 in.
	3rd	STD	0.150 — 0.300 mm	0.0059 — 0.0118 in.
		Limit	0.6 mm	0.024 in.
	5th	STD	0.100 — 0.330 mm	0.0039 — 0.0366 in.
		Limit	1.0 mm	0.039 in.
	Reverse	STD	0.200 — 0.325 mm	0.0079 — 0.0128 in.
		Limit	0.6 mm	0.024 in.
	Reverse idle	STD	0.05 — 0.50 mm	0.0020 — 0.0197 in.
		Limit	1.0 mm	0.039 in.

Specifications (Cont'd)

Manual transmission (T50) (Cont'd)	Gear journal oil clearance			
	1st, 5th and Reverse	Limit	0.150 mm	0.0059 in.
	2nd	Limit	0.150 mm	0.0059 in.
	3rd and Reverse idles	Limit	0.200 mm	0.008 in.
	Shift fork to hub sleeve clearance	Limit	0.8 mm	0.031 in.
	Synchronizer ring to gear clearance	STD	1.0 - 2.0 mm	0.039 - 0.079 in.
		Limit	0.8 mm	0.031 in.
	Front bearing oil seal depth		2.5 mm	0.098 in.
	Reverse idler gear bushing bore	Limit	18.1 mm	0.713 in.
	Reverse idler gear shaft diameter	Limit	15.9 mm	0.626 in.
	Extension housing bushing inner diameter		32.005 - 32.030 mm	1.2600 - 1.2610 in.
	Extension housing bushing and output shaft			
			0.014 - 0.065 mm	0.0006 - 0.0026 in.
	Extension housing bushing installing temperature		80 - 100°C	176 - 212°F
	Input shaft snap ring thickness			
		Mark		
		A	2.35 - 2.40 mm	0.0925 - 0.0945 in.
		B	2.40 - 2.45 mm	0.0945 - 0.0965 in.
		C	2.45 - 2.50 mm	0.0965 - 0.0984 in.
		D	2.50 - 2.55 mm	0.0984 - 0.1004 in.
		E	2.55 - 2.60 mm	0.1004 - 0.1024 in.
	Input bearing spacer thickness			
		Mark		
		1	1.825 - 1.875 mm	0.0719 - 0.0738 in.
		2	1.935 - 1.985 mm	0.0762 - 0.0781 in.
		3	2.045 - 2.095 mm	0.0806 - 0.0825 in.
		4	2.155 - 2.205 mm	0.0848 - 0.0868 in.
		5	2.265 - 2.315 mm	0.0892 - 0.0911 in.
		6	2.375 - 2.425 mm	0.0935 - 0.0955 in.
	Output shaft snap ring thickness (Clutch hub No. 2)			
		Mark		
		0	1.95 - 2.00 mm	0.0768 - 0.0787 in.
		1	2.00 - 2.05 mm	0.0787 - 0.0807 in.
		2	2.05 - 2.10 mm	0.0807 - 0.0827 in.
		3	2.10 - 2.15 mm	0.0827 - 0.0846 in.
		4	2.15 - 2.20 mm	0.0848 - 0.0868 in.
	Output shaft snap ring thickness (Clutch hub No. 3)			
		Mark		
		A	2.60 - 2.65 mm	0.1024 - 0.1043 in.
		B	2.65 - 2.70 mm	0.1043 - 0.1063 in.
		C	2.70 - 2.75 mm	0.1063 - 0.1083 in.
		D	2.75 - 2.80 mm	0.1083 - 0.1102 in.
		E	2.80 - 2.85 mm	0.1102 - 0.1122 in.
		F	2.85 - 2.90 mm	0.1122 - 0.1142 in.
		G	2.90 - 2.95 mm	0.1142 - 0.1161 in.

Specifications (Cont'd)

Manual transmission (T50) (Cont'd)	H	2.95 - 3.00 mm	0.1161 - 0.1181 in.
	J	3.00 - 3.05 mm	0.1181 - 0.1201 in.
	K	3.05 - 3.10 mm	0.1201 - 0.1220 in.
	L	3.10 - 3.15 mm	0.1220 - 0.1240 in.
	M	3.15 - 3.20 mm	0.1240 - 0.1260 in.
	N	3.20 - 3.25 mm	0.1260 - 0.1280 in.
	P	3.25 - 3.30 mm	0.1280 - 0.1299 in.
	Q	3.30 - 3.35 mm	0.1299 - 0.1319 in.
	Output shaft snap ring thickness (Center bearing)		
	Mark		
	a	2.70 - 2.75 mm	0.1063 - 0.1083 in.
	b	2.75 - 2.80 mm	0.1083 - 0.1102 in.
	d	2.80 - 2.85 mm	0.1102 - 0.1122 in.
	e	2.85 - 2.90 mm	0.1122 - 0.1142 in.
	f	2.90 - 2.95 mm	0.1142 - 0.1161 in.
	g	2.95 - 3.00 mm	0.1161 - 0.1181 in.
	h	3.00 - 3.05 mm	0.1181 - 0.1201 in.
	j	3.05 - 3.10 mm	0.1201 - 0.1220 in.
	k	3.10 - 3.15 mm	0.1220 - 0.1240 in.
	l	3.15 - 3.20 mm	0.1240 - 0.1260 in.
	Output shaft snap ring thickness (Rear bearing)		
	Mark		
	1	2.35 - 2.40 mm	0.0925 - 0.0945 in.
	2	2.40 - 2.45 mm	0.0945 - 0.0965 in.
	3	2.45 - 2.50 mm	0.0965 - 0.0984 in.
	4	2.50 - 2.55 mm	0.0984 - 0.1004 in.
	5	2.55 - 2.60 mm	0.1004 - 0.1024 in.
	6	2.60 - 2.65 mm	0.1024 - 0.1043 in.
	7	2.65 - 2.70 mm	0.1043 - 0.1063 in.
	Counter gear snap ring thickness		
	Mark		
	1	2.00 - 2.05 mm	0.0787 - 0.0807 in.
	2	1.80 - 1.85 mm	0.0709 - 0.0729 in.
	3	1.60 - 1.65 mm	0.0630 - 0.0650 in.

Tightening Torque

Manual transmission (T50)	Tightening part	kg-cm	ft-lb
	Transmission case RH x LH	200	14
	Extension housing x Transmission case	375	27
	Restrict pin x Extension housing	400	29
	Shift lever retainer x Extension housing	130	9
	Front bearing retainer x Clutch housing	185	13
	Clutch housing x Transmission case	375	27

AUTOMATIC TRANSMISSION (A42DL)**Specifications**

Governor pressure				
Output shaft rpm	(Vehicle speed reference)			
1,000	(approx. 27 km/h 17 mph)	0.8 - 1.5 kg/cm ²	13 - 21 psi	
1,800	(approx. 48 km/h 30 mph)	1.6 - 2.2 kg/cm ²	23 - 31 psi	
3,500	(approx. 94 km/h 58 mph)	4.1 - 5.3 kg/cm ²	58 - 75 psi	
Line pressure (wheel locked)				
Idling	D range	3.5 - 4.4 kg/cm ²	50 - 63 psi	
	R range	5.0 - 6.4 kg/cm ²	71 - 91 psi	
Still	D range	9.6 - 11.0 kg/cm ²	137 - 156 psi	
	R range	13.7 - 17.0 kg/cm ²	195 - 242 psi	
Engine stall revolution		2,050 ± 150 rpm		
Time lag	N range →	Less than 1.2 seconds		
	N range → R range	Less than 1.5 seconds		
Engine idle speed (A/C OFF)				
	w/o PS N range	800 rpm		
	w/o PS D range	750 rpm		
	w/ PS N range	900 rpm		
	w/ PS D range	850 rpm		
Throttle cable adjustment				
Throttle valve fully opened		Between boot end face and inner cable stopper		
Torque converter runout		Limit	0 - 1 mm	0 - 0.04 in.
Drive plate runout		Limit	0.30 mm	0.0118 in.
			0.20 mm	0.0079 in.

Shift point schedule km/h (mph)	Differential gear ratio	"D" range (throttle valve fully open)					
		1 + 2	2 - 3	3 + OD	OD → 3	3 - 2	2 - 1
	4.100	47 - 62 (29 - 39)	87 - 102 (54 - 63)	*1	*2	83 - 98 (52 - 61)	37 - 48.5 (23 - 30)

*1 3 - OD shift-up point with closed throttle valve is at 37 - 48 km/h (23 - 30 mph)

*2 OD → 3 down-shift possible up to maximum speed.

*3 Lock-up "ON" point with closed throttle valve is at 62 - 70 km/h (39 - 43 mph)

*4 Lock-up "OFF" point with closed throttle valve is at 57 - 66 km/h (35 - 40 mph)

Tightening Torque

Tightening part	kg-cm	ft-lb
Engine x Transmission	850	47
Extension housing	345	26
Rear support member x Rear mounting	130	9
Rear support member x Body	530	38
Drive plate	650	47
Torque converter	185	13
Valve body	100	7
Oil strainer	55	48 in.-lb
Oil pan	45	39 in.-lb

Tightening Torque (Cont'd)

Tightening part	kg-cm	ft-lb
Cooler pipe union nut	350	25
Drain plug	205	15
Parking lock pawl bracket	75	65 in.-lb

PROPELLER SHAFT

Specifications

Bearing axial play	Solid type	Limit	Less than 0.05 mm (0.0020 in.)	
	Shell type	Limit	0	
Runout			0.6 mm	0.031 in.
Hole snap ring thickness	Color			
	None	2.375 - 2.425 mm	0.0935	0.0956 in.
	Brown	2.425 - 2.475 mm	0.0955	0.0974 in.
	Blue	2.475 - 2.525 mm	0.0974	0.0994 in.
	None	2.525 - 2.575 mm	0.0994	0.1014 in.
Snap ring thickness (Flexible coupling)				
		1.40 - 1.44 mm	0.0551	0.0567 in.
		1.43 - 1.47 mm	0.0563	0.0579 in.
		1.48 - 1.50 mm	0.0575	0.0591 in.
		1.49 - 1.53 mm	0.0587	0.0602 in.
		1.52 - 1.56 mm	0.0598	0.0614 in.

Tightening Torque

Tightening part	kg-cm	ft-lb
Universal joint flange yoke x Companion flange	350	25
Center bearing flange x Universal joint flange yoke	350	25
Center bearing bracket x Body	375	27
Intermediate shaft x Center bearing x Joint flange		123 144
1st	1,700 - 2,000	
2nd	Loosen nut	
3rd	300	22
Sleeve yoke x Flexible coupling x Intermediate shaft	900	65

FRONT AXLE AND SUSPENSION

Specifications

Cold tire inflation pressure		1.7 kg/cm ² 24 psi			
Front wheel alignment	Inspection STD		Adjustment STD		
	Toe-in		1 ± 1 mm (0.04 ± 0.04 in.)		
	Camber		Australia Others		
	Left-right error		15' ± 45' 20' ± 45' 30'		
	Steering axis inclination		Australia Others		
	Left-right error		8°50' ± 45' 8°45' ± 45' 30'		
	Caster		4A, 4A-C 4A, 4A-C 4A-GE 4A, 4A-C 4A, 4A-C 4A-GE		
	Left-right error		w/PS w/o PS w/o PS w/PS w/o PS w/o PS		
			3°40'±45' 2°45'±45' 3°40'±45' 3°40'±30' 2°45'±30' 3°40'±30'		
	Side slip		Less than 3.0 mm/m (0.118 in./3.3 ft)		
Wheel angle			4A, 4A-C 4A, 4A-C 4A-GE		
			w/PS w/o PS w/o PS		
	Max.	Inside wheel	38°30' ± 2°	38°30' ± 2°	38°30' ± 2°
		Outside wheel (Reference)	33°	33°30'	33°30'
	at 20°	Inside wheel	21°		
		Outside wheel	20°		
Disc wheel lateral runout		Max. limit	1.0 mm	0.039 in.	
Wheel bearing preload (turning load at hub in addition to rotation friction force of the oil seal)			0 - 1,050 g	0 2.3 lb	
Hub axial play		Max. limit	0.05 mm	0.0020 in.	
Ball joint vertical play		Max. limit	2.5 mm	0.098 in.	

Tightening Torque

Tightening part	kg-cm	ft-lb
Shock absorber piston rod x Suspension support	475	34
Shock absorber shell x Ring nut	1,250	90
Lower arm x Suspension member	800	58
Lower ball joint x Steering knuckle arm	800	58
Strut bar x Strut bar bracket	925	67
Steering knuckle arm x Tie rod	600	43
Strut bar x Lower arm	475	34
Strut bar bracket x Body	925	67
Stabilizer bar x Lower arm	180	13
Stabilizer bar bracket x Strut bar bracket	130	9
Suspension support x Fender apron	185	13
Shock absorber x Knuckle arm	600	58
Suspension member x Body	800	58
Wheel nut x Front wheel hub	1,050	75
Disc brake caliper x Disc brake dust cover	650	47

REAR AXLE AND SUSPENSION

Specifications

Rear axle	Rear axle shaft bearing inner retainer installing temperature		150°C	302°F
	Rear axle shaft runout	Limit	1.5 mm	0.059 in.
Differential	Rear axle shaft flange runout	Limit	0.1 mm	0.004 in.
	Drive pinion bearing preload	at Starting		
		New bearing	10 - 16 kg-cm	8.7 - 13.9 in.-lb
		Reused bearing	5 - 8 kg-cm	4.3 - 8.9 in.-lb
	Total preload	at Starting	Add drive pinion bearing preload	
		8.7 in. and LSD	3 - 5 kg-cm	2.6 - 4.3 in.-lb
		6.38 in.	2 - 4 kg-cm	1.7 - 3.5 in.-lb
	Drive pinion to ring gear backlash		0.13 - 0.18 mm	0.0051 - 0.0071 in.
	Pinion gear to side gear backlash 8.7 in. and LSD		0.05 - 0.20 mm	0.0020 - 0.0079 in.
		6.38 in.	0.02 - 0.20 mm	0.0008 - 0.0079 in.
	Ring gear runout	Limit	0.07 mm	0.0028 in.
	Companion flange runout	Limit Radial	0.10 mm	0.0039 in.
		Lateral	0.10 mm	0.0039 in.
	Ring gear installing temperature		90 - 110°C	194 - 230°F
	Oil seal drive in depth	8.7 in. and LSD	4.0 mm	0.157 in.
		6.38 in.	0.5 mm	0.020 in.
	Side gear thrust washer thickness (6.7 in.)		0.95 mm	0.0374 in.
			1.00 mm	0.0394 in.
			1.05 mm	0.0413 in.
			1.10 mm	0.0433 in.
			1.15 mm	0.0453 in.
			1.20 mm	0.0472 in.
	(6.38 in.)		1.48 - 1.52 mm	0.0583 - 0.0598 in.
			1.53 - 1.57 mm	0.0602 - 0.0618 in.
			1.58 - 1.62 mm	0.0622 - 0.0638 in.
			1.63 - 1.67 mm	0.0642 - 0.0657 in.
			1.68 - 1.72 mm	0.0661 - 0.0677 in.
			1.73 - 1.77 mm	0.0681 - 0.0697 in.
	Side gear adjusting washer thickness (LSD)		1.80 mm	0.0630 in.
			1.65 mm	0.0650 in.
			1.70 mm	0.0669 in.
			1.75 mm	0.0689 in.
			1.80 mm	0.0709 in.
			1.85 mm	0.0728 in.

Specifications (Cont'd)

Differential (Cont'd)	Drive pinion adjusting plate washer thickness (8.7 in. and LSD)	2.27 mm	0.0894 in.
		2.30 mm	0.0906 in.
		2.33 mm	0.0917 in.
		2.36 mm	0.0929 in.
		2.39 mm	0.0941 in.
		2.42 mm	0.0953 in.
		2.45 mm	0.0965 in.
		2.48 mm	0.0976 in.
		2.51 mm	0.0988 in.
		2.54 mm	0.1000 in.
		2.57 mm	0.1012 in.
		2.60 mm	0.1024 in.
		2.63 mm	0.1035 in.
		2.66 mm	0.1047 in.
		2.69 mm	0.1059 in.
		2.51 - 2.53 mm	0.0988 - 0.0996 in.
		2.54 - 2.56 mm	0.1000 - 0.1008 in.
		2.57 - 2.59 mm	0.1012 - 0.1020 in.
		2.60 - 2.62 mm	0.1024 - 0.1031 in.
		2.63 - 2.65 mm	0.1035 - 0.1043 in.
		2.66 - 2.68 mm	0.1047 - 0.1055 in.
		2.69 - 2.71 mm	0.1059 - 0.1067 in.
		2.72 - 2.74 mm	0.1071 - 0.1079 in.
		2.75 - 2.77 mm	0.1083 - 0.1091 in.

Tightening Torque

Rear axle shaft	Tightening part	kg-cm	ft-lb
	Bearing retainer x Backing plate	670	48
Differential:	Propeller shaft x Companion flange	300	22
	Drive pinion x Companion flange	1,750	127
	Ring gear x Differential case		
	6.7 in. and LSD	985	71
	6.38 in.	750	54
	Side bearing cap x Differential carrier		
	6.7 in. and LSD	800	58
	6.38 in.	600	43
	Side bearing adjusting nut lock	130	9
	Differential carrier x Axle housing	315	23
	Differential case x Differential case cover		
	6.38 in. LSD	315 450	23 33

Tightening Torque (Cont'd)

Suspension	Tightening parts	kg-cm	ft-lb
	Shock absorber x Body	250	18
	Shock absorber x Rear axle housing	375	27
	Lateral control rod x Rear axle housing	650	47
	Lateral control rod x Body	1,200	87
	Upper control arm x Rear axle housing	1,200	87
	Upper control arm x Body	1,200	87
	Lower control arm x Rear axle housing	1,200	87
	Lower control arm x Body	1,200	87
	Stabilizer bracket x Rear axle housing	375	27
	Stabilizer link x Stabilizer bar	310	22

BRAKE SYSTEM

Specifications

Brake pedal	Pedal height (from asphalt sheet)		LHD	161 - 171 mm	6.34 - 6.73 in
			RHD	162 - 172 mm	6.38 - 6.77 in
	Pedal freesplay			3 - 8 mm	0.12 - 0.24 in.
	Pedal reserve distance		at 50 kg (110.2 lb)	More than 75 mm (2.95 in.)	
Brake booster	Booster push rod to piston clearance				
	at idling vacuum w/SST			0.1 - 0.5 mm	0.004 - 0.020 in.
				0 mm	0 in
Front brake	Disc thickness	STD	w/4A-GE and Switzerland 4A-C	18.0 mm	0.709 in
			Others	12.5 mm	0.492 in
	Limit		w/4A-GE and Switzerland 4A-C	17.0 mm	0.669 in
			Others	11.5 mm	0.453 in
	Disc runout	Limit		0.15 mm	0.0059 in
	Pad lining thickness	STD		10.0 mm	0.394 in
		Limit		1.0 mm	0.039 in
A 10	Drum inside diameter	STD	9 in. Drum	228.6 mm	9.000 in.
			8 in. Drum	200.0 mm	7.874 in.
		Limit	9 in. Drum	230.6 mm	9.078 in.
			8 in. Drum	202.0 mm	7.953 in.
	Lining thickness	STD	8 in. Drum	4.0 mm	0.157 in.
			9 in. Drum	5.0 mm	0.197 in.
		Limit		1.0 mm	0.039 in.
	Shoe to parking brake shoe lever clearance			0 - 0.35 mm	0 - 0.0138 in
	Parking brake shoe lever shim thickness			0.2 mm	0.008 in.
				0.3 mm	0.012 in.
				0.4 mm	0.016 in.
				0.5 mm	0.020 in.
				0.6 mm	0.024 in.
				0.9 mm	0.035 in.
	Drum to shoe clearance			0.6 mm	0.024 in.

Specifications (Cont'd)

Rear brake (Disc)	Disc thickness	STD	10.0 mm	0.394 in.
		Limit	9.0 mm	0.354 in.
	Disc runout	Limit	0.15 mm	0.0059 in.
	Pad lining thickness	STD	9.5 mm	0.374 in.
		Limit	1.0 mm	0.039 in.
Parking brake	Lever travel at 20 kg (44.1 lb)			
	w/Rear brake drum		5 - 8 clicks	
	w/Rear brake disc		6 - 9 clicks	

Tightening Torque

Tightening parts	kg-cm	ft. lb
Brake booster clevis lock nut	260	19
Brake booster x Pedal bracket	130	9
Master cylinder x Brake booster	130	9
Reservoir set bolt x Master cylinder	250	18
Outlet plug x Master cylinder	450	33
Piston stopper bolt x Master cylinder	100	7
Front disc brake torque plate x Dust cover	650	47
Front disc brake cylinder installation bolt	200	14
Dust cover x Steering knuckle	475	34
Flexible hose	235	17
Brake tube union nut	155	11
Bleeder plug	85	74 in. lb
Front disc x Front side hub	650	47
Rear brake wheel cylinder x Backing plate	100	7
Rear disc brake cylinder mounting x Dust cover	475	34
Rear disc brake cylinder installation bolt	200	14
Brake pedal setting nut (LHD or bolt (RHD))	375	27
Parking brake lever x Body	130	9

STEERING

Specifications

Steering	Steering wheel freeplay		Less than 30 mm (1.18 in.)		
	Steering rack runout	Limit	0.3 mm	0.012 in.	
	Pinion bearing preload	at Turning	2.3 – 3.3 kg-cm	2.0 – 2.9 in.-lb	
	Total preload	at Starting	7.5 – 9.5 kg-cm	6.5 – 8.2 in.-lb	
Power steering	Maximum rise of oil level		Below 5 mm (0.20 in.)		
	Oil pressure	at Idle speed	More than 65 kg/cm ² (924 psi)		
	Variation in vane pump discharge pressure (at 1 000 rpm and 3 000 rpm)		Less than 5 kg/cm ² (71 psi)		
	Drive belt tension	at 10 kg (22.0 lb)			
		New belt	7 – 9 mm	0.28 – 0.35 in.	
	Steering effort	Used belt	9 – 14 mm	0.35 – 0.55 in.	
		at Steering wheel	Less than 5.5 kg (12.1 lb)		
	Vane plate	Height	Limit	8.1 mm	0.319 in.
		Thickness	Limit	1.797 mm	0.0707 in.
		Length	Limit	14.986 mm	0.5901 in.
	Vane plate to rotor groove clearance				
	Vane plate length	Limit	0.026 mm	0.001 in.	
			14.996 – 14.998 mm	0.5904 – 0.5906 in.	
			14.994 – 14.996 mm	0.5903 – 0.5904 in.	
			14.992 – 14.994 mm	0.5902 – 0.5903 in.	
			14.990 – 14.992 mm	0.5902 – 0.5902 in.	
			14.988 – 14.990 mm	0.5901 – 0.5902 in.	
	Shaft to bushing clearance	STD	0.01 – 0.03 mm	0.0004 – 0.0012 in.	
		Limit	0.07 mm	0.0028 in.	
	Flow control spring length	STD	50.0 mm	1.969 in.	
		Limit	47.0 mm	1.850 in.	
	Pump rotating torque		Less than 2.8 kg-cm (2.4 in.-lb)		
	Steering rack runout	Limit	0.3 mm	0.012 in.	
	Control valve shaft preload	at Turning	4.0 – 6.5 kg-cm	3.5 – 5.6 in.-lb	
	Total preload	at Turning	5.0 – 10.0 kg-cm	4.3 – 8.7 in.-lb	

Tightening Torque








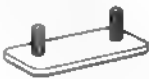

Steering main shaft	Tightening part	kg-cm	ft-lb
	Steering wheel x Steering main shaft	360	26
	Universal joint	360	26
	Tilt steering support x Body	280	20
	Column upper support x Body	290	21
	Upper bracket x Steering column tube	195	14
	Thrust stopper x Column tube	130	9
Steering gear housing	Pinion bearing adjusting screw lock nut	1,150	83
	Rack guide spring cap lock nut	700	51
	Rack end x Rack	850	61
	Gear housing bracket x Body	375	27
	Tie rod x Knuckle arm	800	43
	Tie rod clamp bolt	175	13
Power steering	Pressure port union x Front housing	700	51
	Reservoir tank x Vane pump 12 mm bolt	130	9
	14 mm bolt	420	30
	Pump mounting bolt	400	29
	Drive pulley x Shaft	440	32
	Pressure tube x Pump	475	34
	Cylinder end stopper nut	1,750	127
	Rack housing x Control valve housing	185	13
	Adjusting plug lock nut	500	36
	Rack guide spring cap lock nut	700	51
	Tie rod clamp bolt	175	13
	Turn pressure tube x Housing	300	22
	Gear housing bracket x Body	375	27
	Return line x Control valve housing	450	33
	Pressure line x Control valve housing	450	33
Tilt steering	Tilt steering pawl set bolt	120	9
	Tilt lever x Adjusting nut	340	25

LUBRICANT

Item	Capacity			Classification
	Liters	US qts	Imp. qts	
Manual transmission oil T50	1.7	1.8	1.6	API GL-4 or GL-5, SAE 90
Automatic transmission fluid				ATF type F
Dry fill	5.7	6.0	5.0	
Drain and refill	2.4	2.5	2.1	
Differential oil				API GL-5 hypoid gear oil
6.38"	1.0	1.1	0.9	w/LSD Use LSD oil only
6.7" and LSD	1.3	1.4	1.1	Above -18°C (0°F) SAE 90 Below -18°C (0°F) SAE 80W 90 or 80W
Power steering fluid	0.65	0.7	0.6	ATF type DEXRON or DEXRON II
Ball joint grease				Molybdenum disulphide lithium base, NLGI No. 1 or No. 2
Wheel bearing grease				Lithium base multipurpose, NLGI No. 2
Brake fluid				SAE J1703, DOT 3

STANDARD BOLT TIGHTENING TORQUE















HOW TO DETERMINE BOLT STRENGTH

	Mark	Class		Mark	Class
Hexagon head bolt	 Bolt head No 4— 5— 6— 7—	4T 5T 6T 7T	Stud bolt	 No mark	4T
	 No mark	4T			
Hexagon flange bolt w/washer hexagon bolt	 No mark	4T		 Grooved	6T
Hexagon head bolt	 Two protruding lines	5T	Welded bolt		
Hexagon flange bolt w/washer hexagon bolt	 Two protruding lines	6T		 4T	4T
Hexagon head bolt	 Three protruding lines	7T			















SPECIFIED TORQUE FOR STANDARD BOLTS

Class	Basic diameter mm	Pitch mm	Tightening torque				kg-cm (ft-lb)	
			Hexagon head bolt		Hexagon flange bolt		Target	Range
			Target	Range	Target	Range		
4T	6	1	55 (4.0)	44 - 86 (3.2 - 4.8)	80 (4.3)	48 - 72 (3.5 - 5.2)		
	8	1.25	130 (9.4)	104 - 156 (7.5 - 11.3)	145 (10.6)	116 - 174 (8.4 - 12.8)		
	10	1.25	260 (18.8)	208 - 312 (15.0 - 22.6)	290 (21.0)	232 - 348 (16.8 - 25.2)		
	12	1.25	480 (34.7)	384 - 576 (27.8 - 41.7)	540 (39.1)	432 - 648 (31.2 - 46.9)		
	14	1.5	760 (55.0)	608 - 912 (44.0 - 66.0)	850 (61.5)	680 - 1,020 (49.2 - 73.8)		
	16	1.5	1,150 (83.2)	920 - 1,380 (66.5 - 99.8)				
5T	8	1	65 (4.7)	52 - 78 (3.8 - 5.8)		-		
	8	1.25	180 (11.6)	128 - 192 (9.3 - 13.9)		-		
	10	1.25	330 (23.9)	264 - 396 (19.1 - 28.6)		-		
	12	1.25	600 (43.4)	480 - 720 (34.7 - 52.1)		-		
	14	1.5	930 (67.3)	744 - 1,116 (53.8 - 80.7)		-		
	16	1.5	1,400 (101.3)	1,120 - 1,880 (81.0 - 121.5)		-		
6T	6	1	80 (5.8)	64 - 96 (4.6 - 6.9)	90 (6.6)	72 - 108 (5.2 - 7.8)		
	8	1.25	195 (14.1)	156 - 234 (11.3 - 16.9)	210 (15.2)	168 - 252 (12.2 - 18.2)		
	10	1.25	400 (28.9)	320 - 480 (23.1 - 34.7)	440 (31.8)	362 - 528 (26.5 - 38.2)		
	12	1.25	730 (52.8)	584 - 878 (42.2 - 63.4)	810 (58.6)	648 - 972 (46.9 - 70.3)		
	14	1.5		-	1,250 (90.4)	1,000 - 1,500 (72.3 - 108.5)		
7T	6	1	110 (8.0)	88 - 132 (6.4 - 9.5)	120 (8.7)	96 - 144 (6.9 - 10.4)		
	8	1.25	260 (18.8)	208 - 312 (15.0 - 22.6)	290 (21.0)	232 - 348 (16.8 - 25.2)		
	10	1.25	530 (38.3)	424 - 636 (30.7 - 46.0)	590 (42.7)	472 - 708 (34.2 - 51.2)		
	12	1.25	970 (70.2)	776 - 1,184 (56.1 - 84.2)	1,050 (75.9)	840 - 1,260 (60.8 - 91.1)		
	14	1.5	1,600 (108.5)	1,200 - 1,800 (86.8 - 130.2)	1,700 (123.0)	1,360 - 2,040 (98.4 - 147.8)		
	16	1.5	2,300 (166.4)	1,840 - 2,760 (133.1 - 199.6)		-		















SST (SPECIAL SERVICE TOOLS)

Section			CL	MT	AT	PR	FA	RA	BR	SR	BO
Illustration	Part No.	Part Name									
	09201-60011	Valve Stem Guide Remover & Replacer		●							
	09223-22010	Crankshaft Front Oil Seal Replacer		●							
	09301-00013	Diaphragm Aligner Tool Set	●								
	09301-35010	Clutch Guide Tool	●								
	09303-35011	Input Shaft Front Bearing Puffer	●								
	09304-30012	Input Shaft Front Bearing Replacer	●								
	09307-12010	Extension Housing Bushing Replacer		●							
	09308-00010	Oil Seal Puller		●				●	●		
	09308-10010	Oil Seal Puller		●	●			●			
	09315-00010	Clutch Release Bearing Remover & Replacer	●								
	09316-60010	Transmission & Transfer Bearing Replacer		●							
	09325-12010	Transmission Oil Plug		●		●					
	09325-20010	Transmission Oil Plug			●	●					
	09330-00020	Companion Flange Holding Tool				●		●			






SST (SPECIAL SERVICE TOOLS) (Cont'd)

Section			CL	MT	AT	PR	FA	RA	BR	SR	BO
Illustration	Part No.	Part Name									
	00332-25010	Universal Joint Bearing Remover & Replacer				•					
	00411-22011	Side Gear Thrust Washer Adjust Tool						•			
	00502-10012	Differential Side Bearing Puller						•			
	00504-00011	Differential Side Bearing Adjusting Nut Wrench						•			
	00505-30011	Differential Drive Pinion Bearing Cone Replacer						•			
	00515-20010	Rear Axle Shaft Bearing Replacer		•							
	00515-21010	Rear Axle Shaft Bearing Replacer						•			
	00515-30010	Rear Wheel Bearing Replacer							•		
	00517-12010	Rear Axle Shaft Oil Seal Replacer						•			
	00517-30010	Rear Axle Shaft Oil Seal Replacer						•			
	00520-00031	Rear Axle Shaft Puller						•			
	00527-21011	Rear Axle Shaft Bearing Remover						•			
	00527-30010	Rear Axle Shaft Bearing Remover						•			
	00550-10012	Rear Axle Shaft Oil Seal Replacer Set						•			

SST (SPECIAL SERVICE TOOLS) (Cont'd)

Section			CL	MT	AT	PR	FA	RA	BR	SR	BO
Illustration	Part No.	Part Name									
	00629-30810	(Steering Gear Box) Replacer Set								●	
	00629-42811	Ball Joint Puller								●	
	00630-90010	(Power Steering Gear Housing Overhaul Tool Set)								●	
	00630-24812	(Steering Rack Oil Seal) Tool Set								●	
	00631-12810	(Cylinder End Stopper) Nut Wrench								●	
	00631-12820	Pleadal								●	
	00631-12030	IOI Seal A Remover								●	
	00631-12040	IOI Seal A Replacer								●	
	00631-12050	(Steering Rack Oil Seal Test Tool)								●	
	00631-10820	(Steering Rack A Cover)								●	
	00631-22820	(Power Steering Hose Nut 14 x 17) Wrench								●	
	00703-38010	(Brake Shoe Return) Spring Tool								●	
	00704-10810	(Brake Adjusting) Tool								●	
	00710-14812	(Rear Suspension) Bushing Tool Set						●			

SST (SPECIAL SERVICE TOOLS) (Cont'd)

Section			CL	MT	AT	PR	FA	RA	BR	SR	BO
Illustration	• Part No.	• Part Name									
	00921-00010	(Spring Tension Tool)		●							
	00922-00010	(Wrench 5 x 12)						●			
	00950-00020	(Weening Remover)						●			
	00950-20014	(Universal Puller)		●				●		●	
	00952-00093	(IOI Pressure Gauge)			●						



Power Source



Starting



EPB



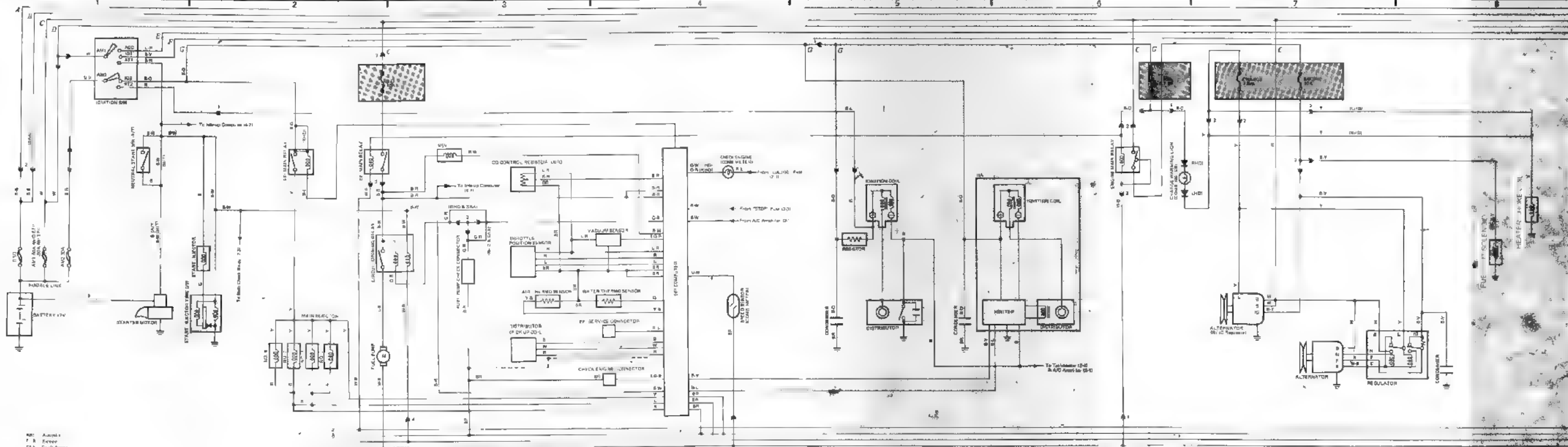
Ignition



Charging



Carburetor

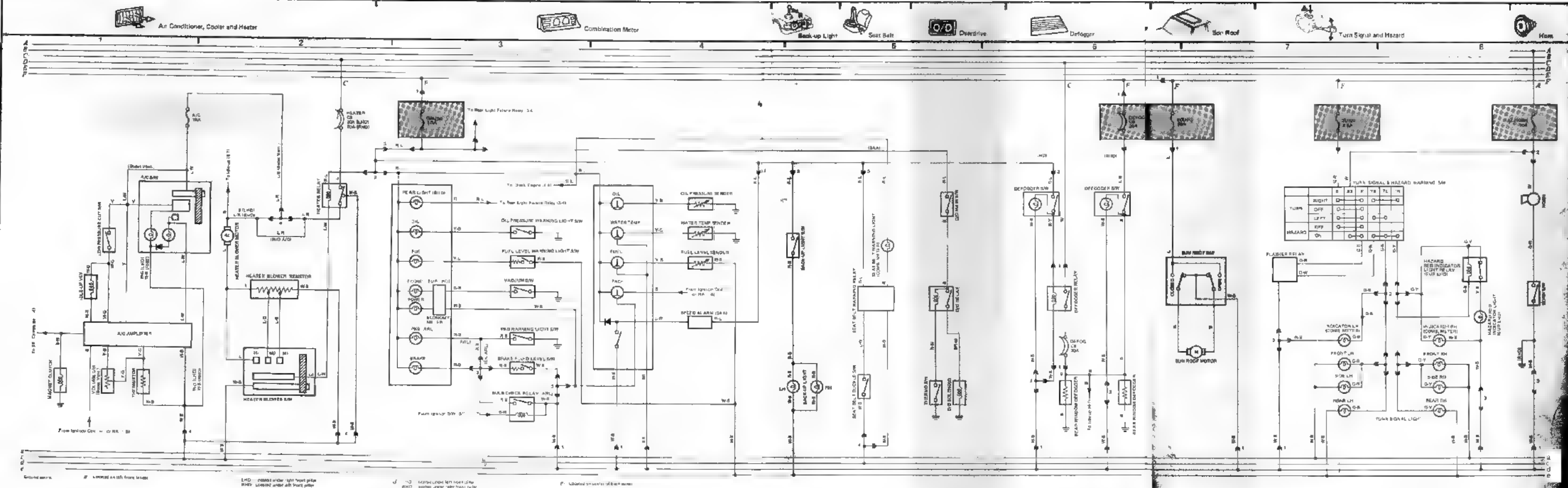


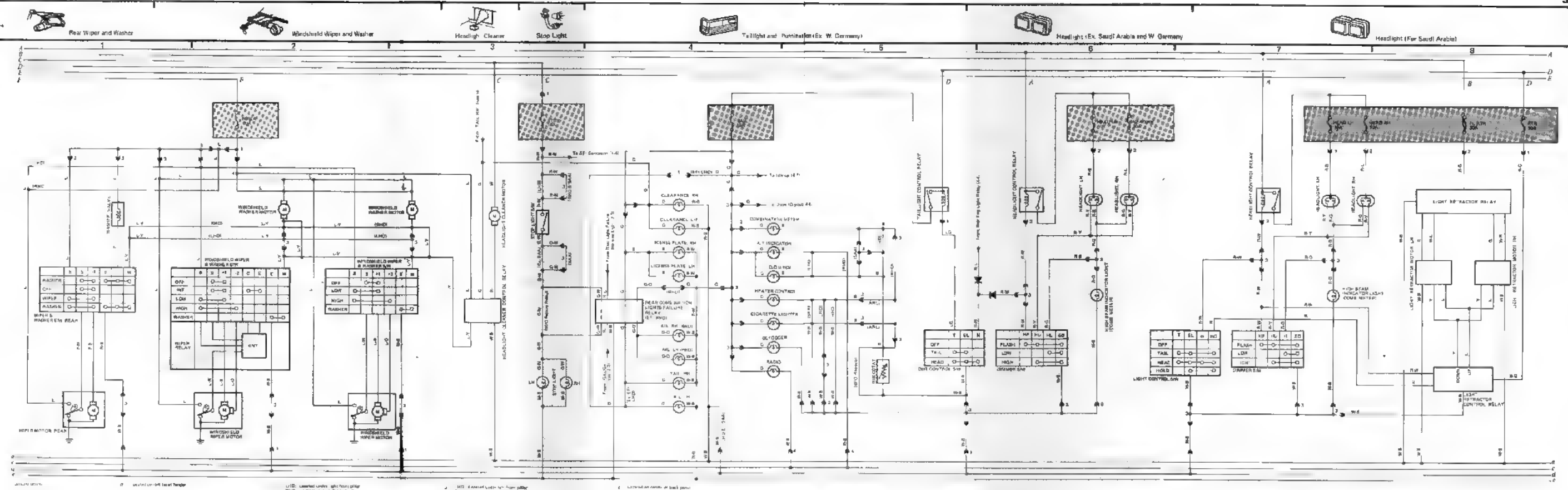
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S: South Africa

W: Limited under right hand drive
F: Limited under left hand drive
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W: Limited under right hand drive
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




ELECTRICAL WIRING DIAGRAMS

SYSTEM INDEX

COROLLA *FR*

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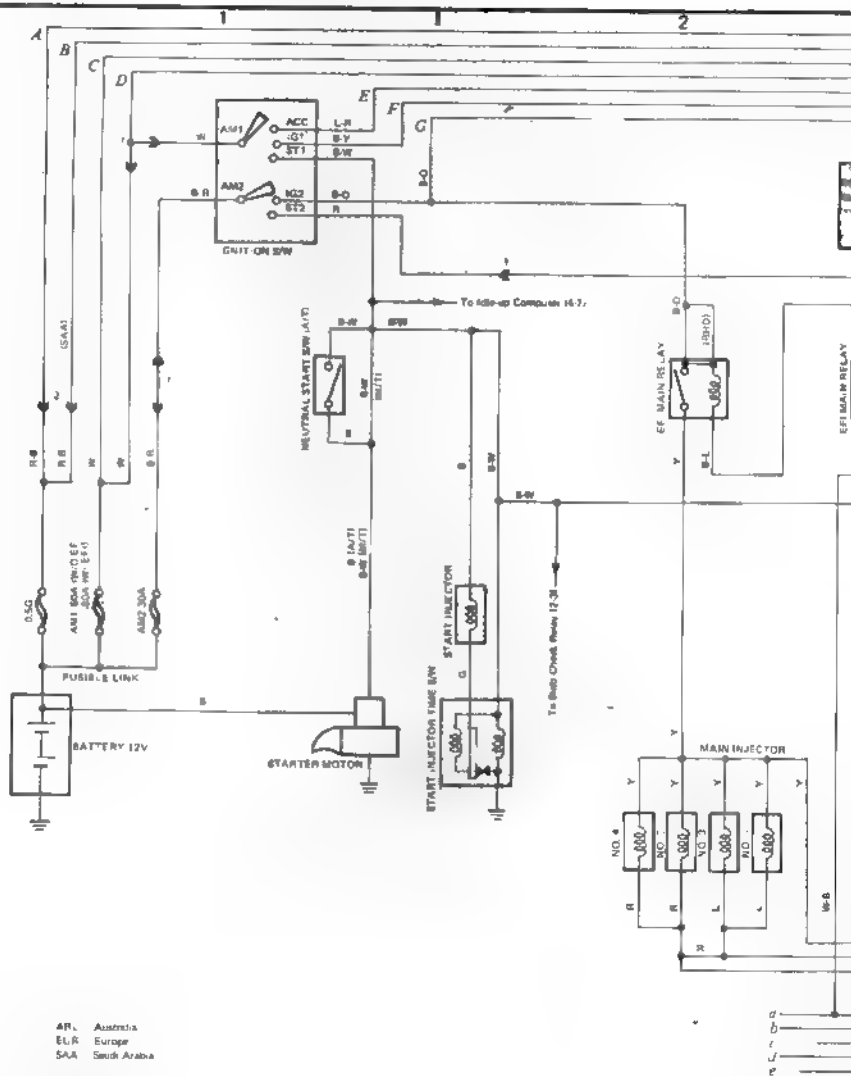
COROLLA ELECTRICAL WIRING DIAGRAM



Power Source



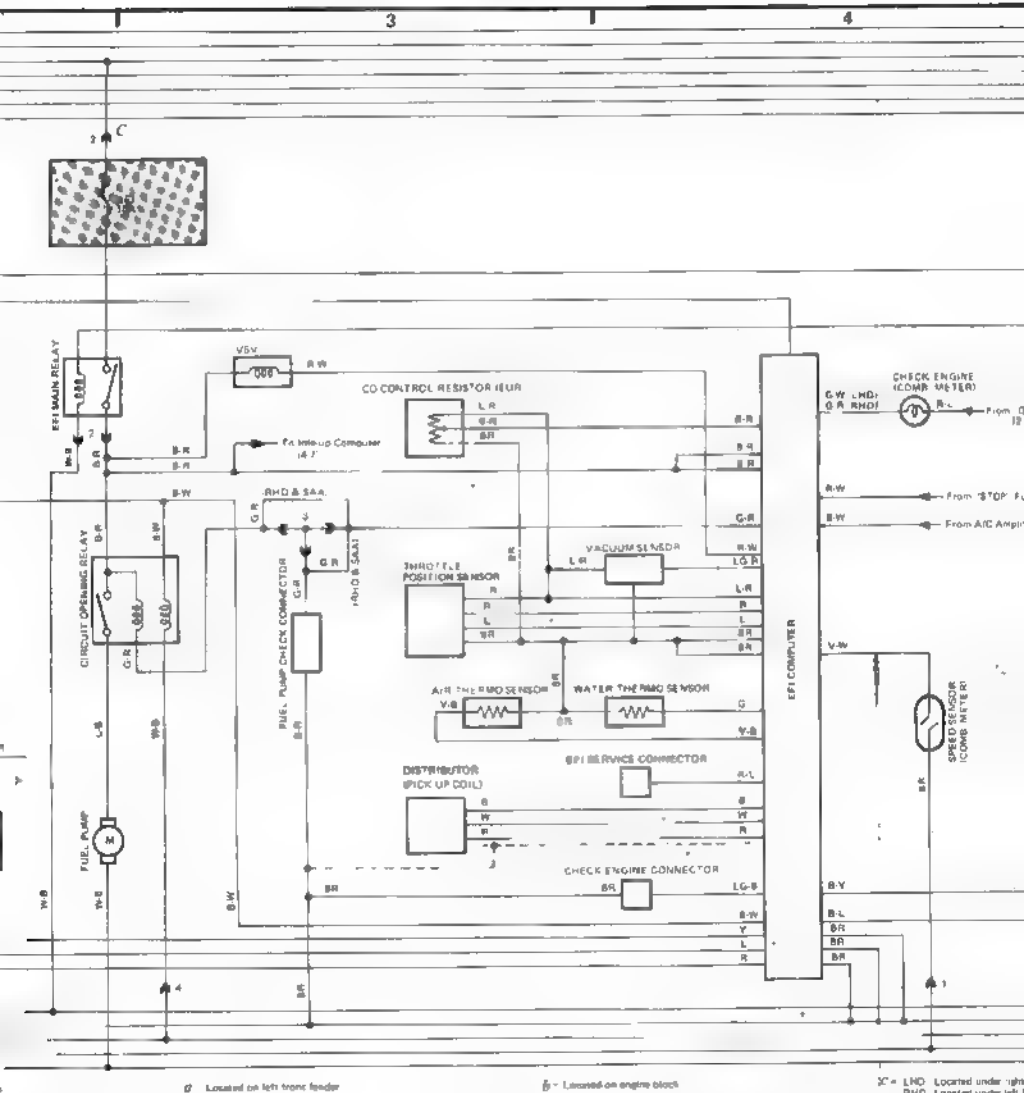
Starting



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 EUR, Europe
 SAA, Saudi Arabia

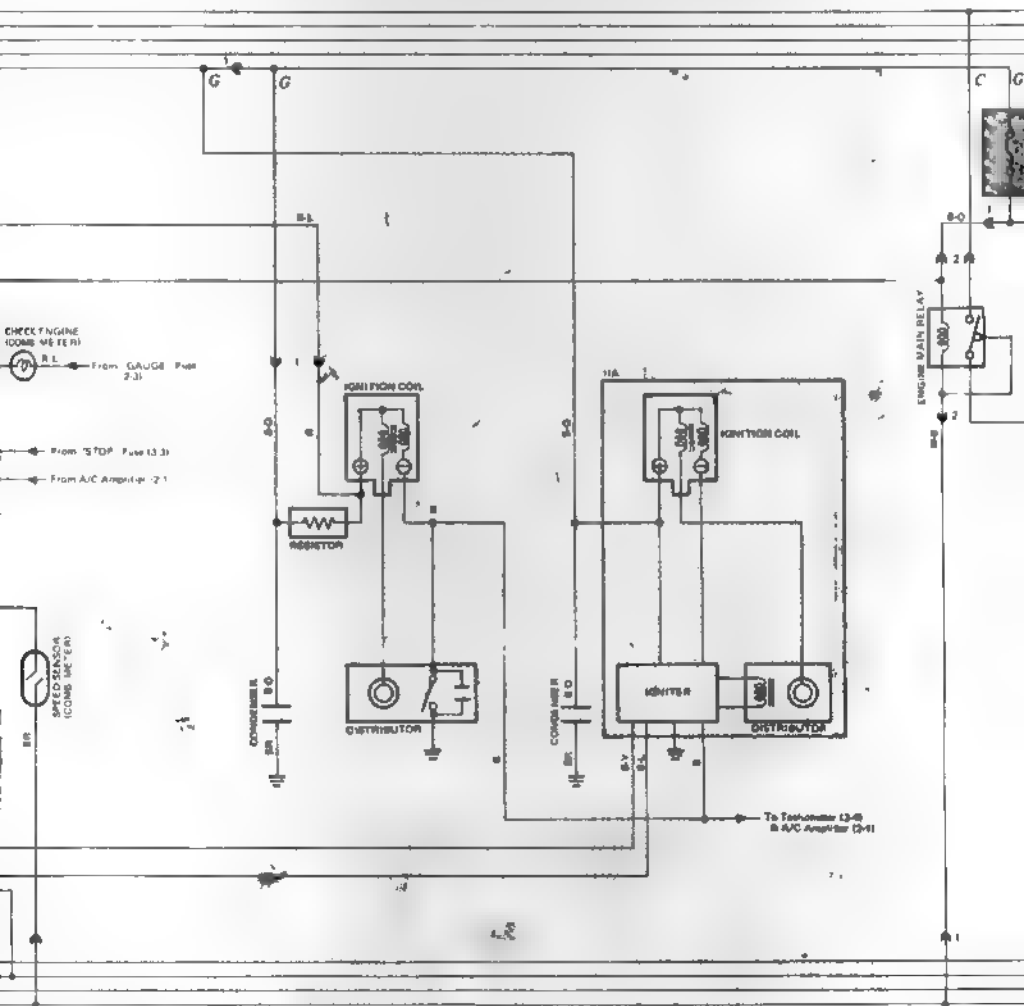


EFI





Ignition



JHD Located under right front pillar
 BHD Located under left front pillar

d = LH/C Located under left front pillar
 BHD Located under right front pillar

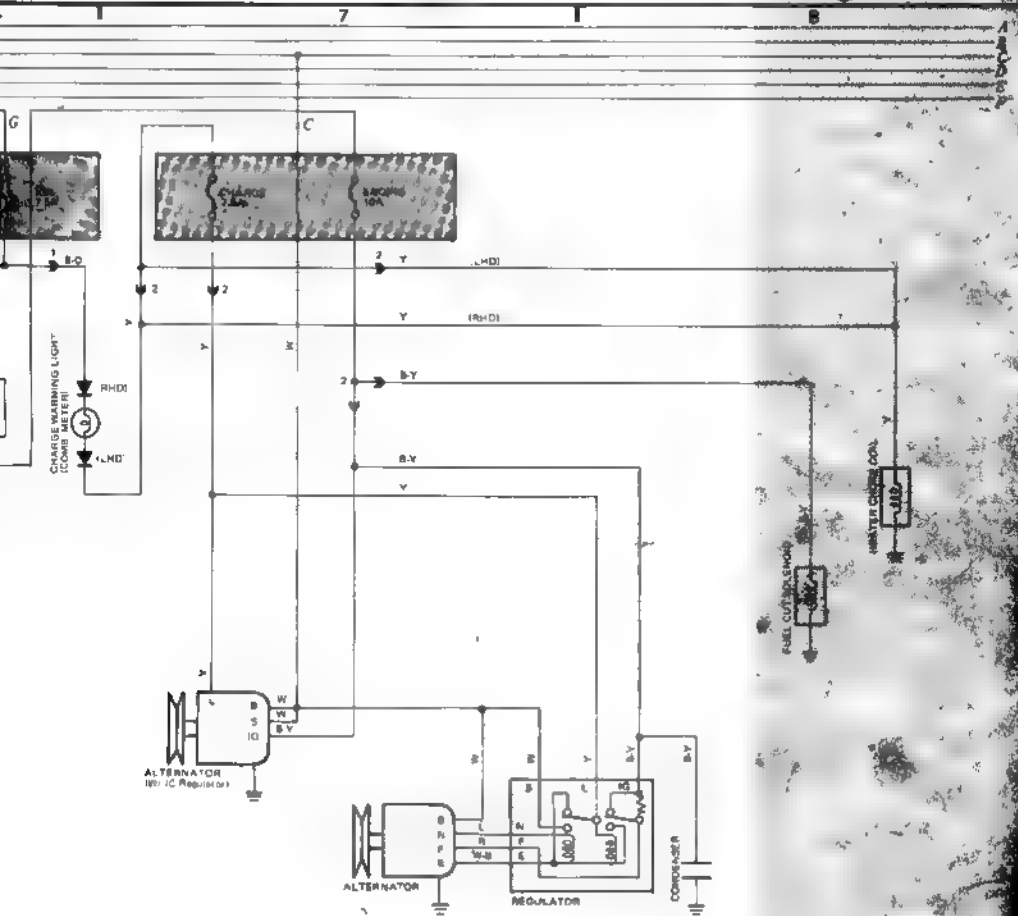
E = Located in center of back panel



Charging

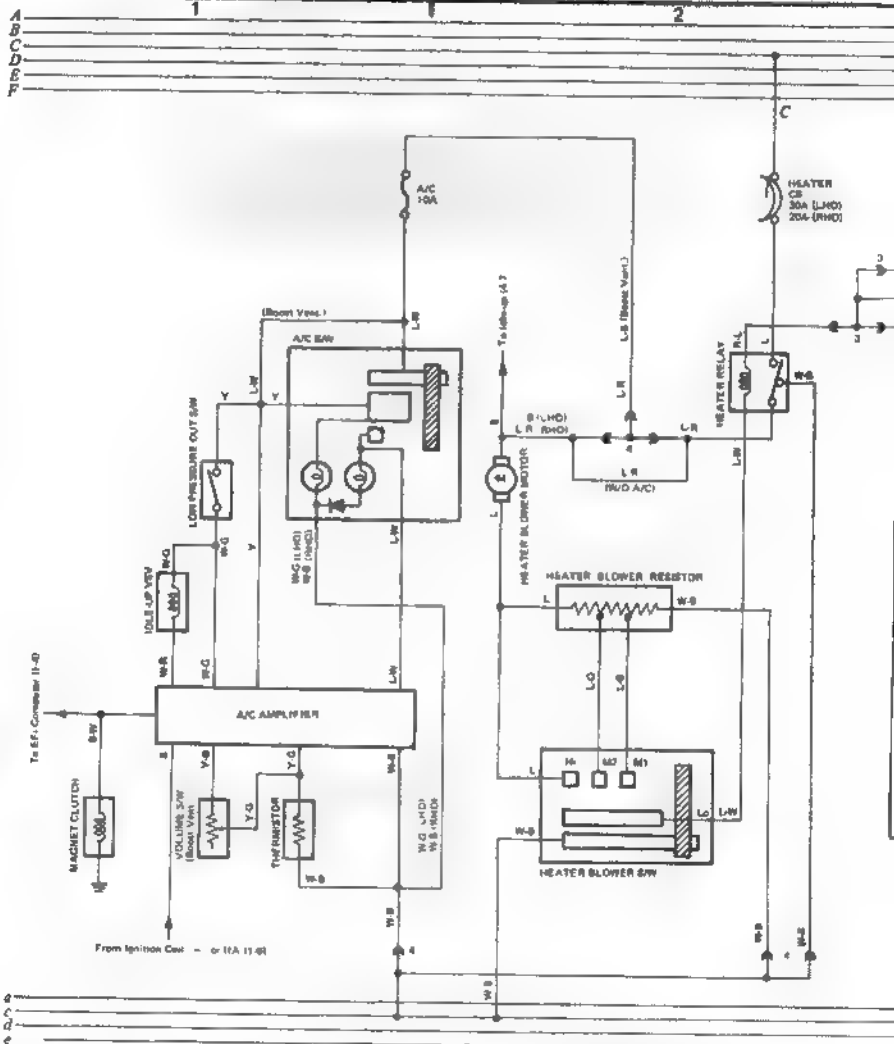


Carburetor



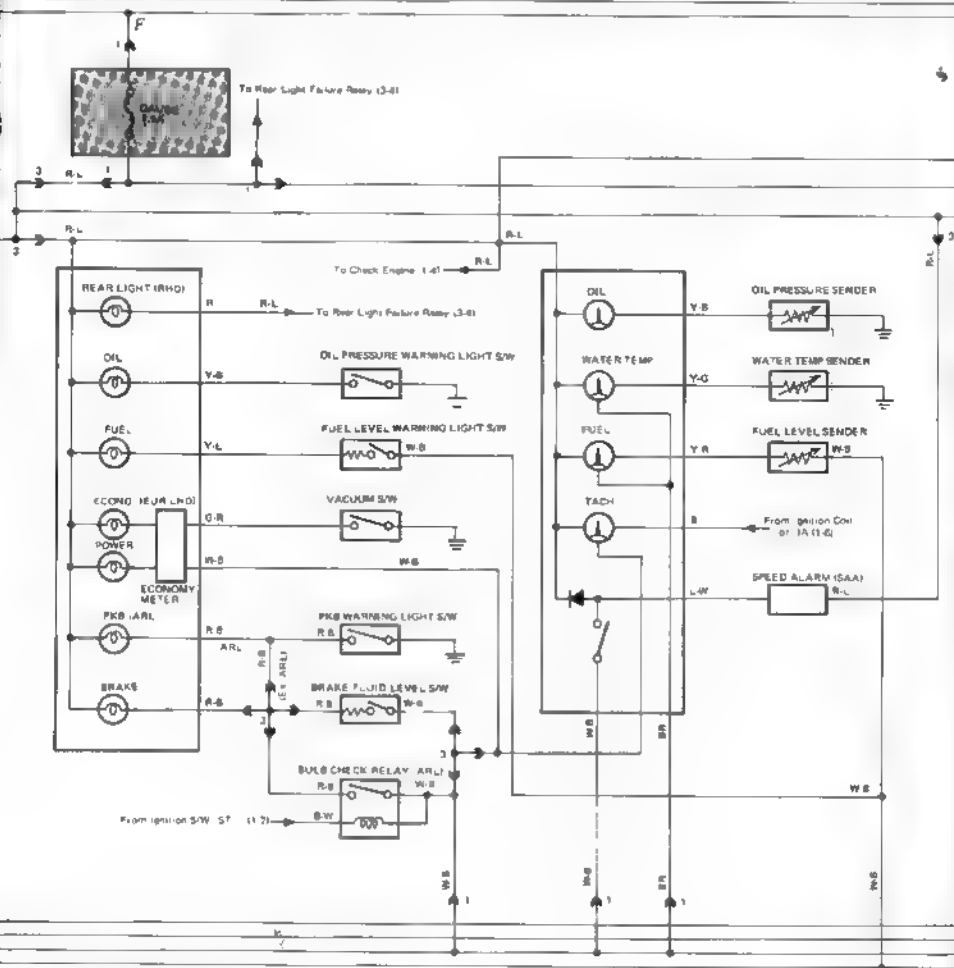


Air Conditioning, Cooler and Heater





Combination Meter



(L) = LHD - Located under left front pillar
RHD - Located under right front pillar

(C) = Located on center of back panel



Back-up Light



Seat Belt



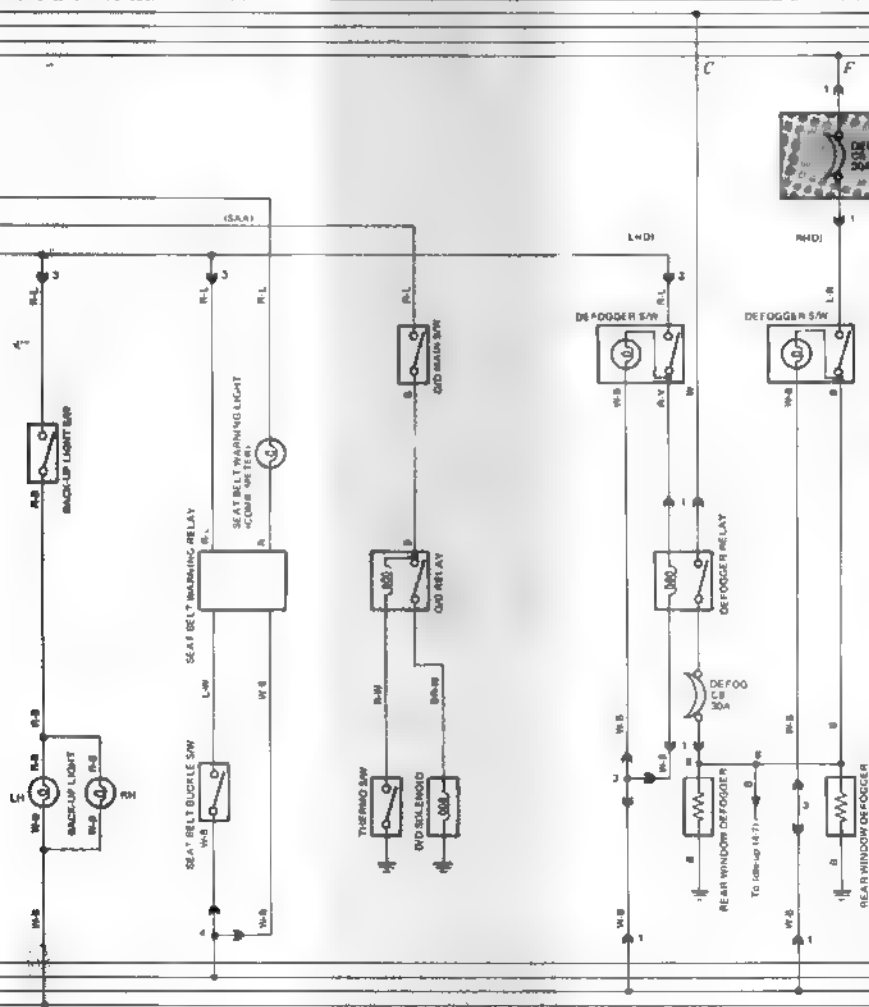
Overdrive



Defogger

5

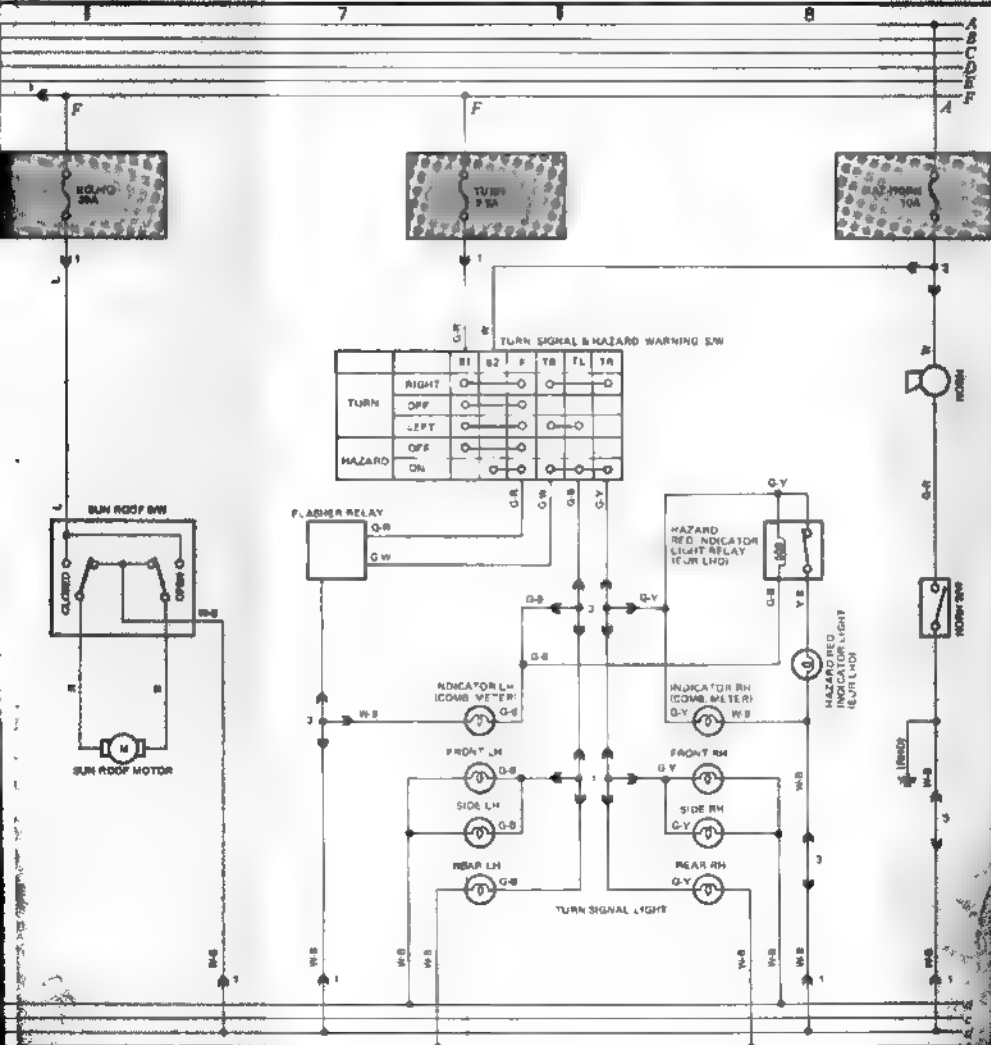
6



Sun Roof

Turn Signal and Hazard

Horn



Of = Located on left from developer

L = LHD Located under right front pillar
RHD Located under left front pillar

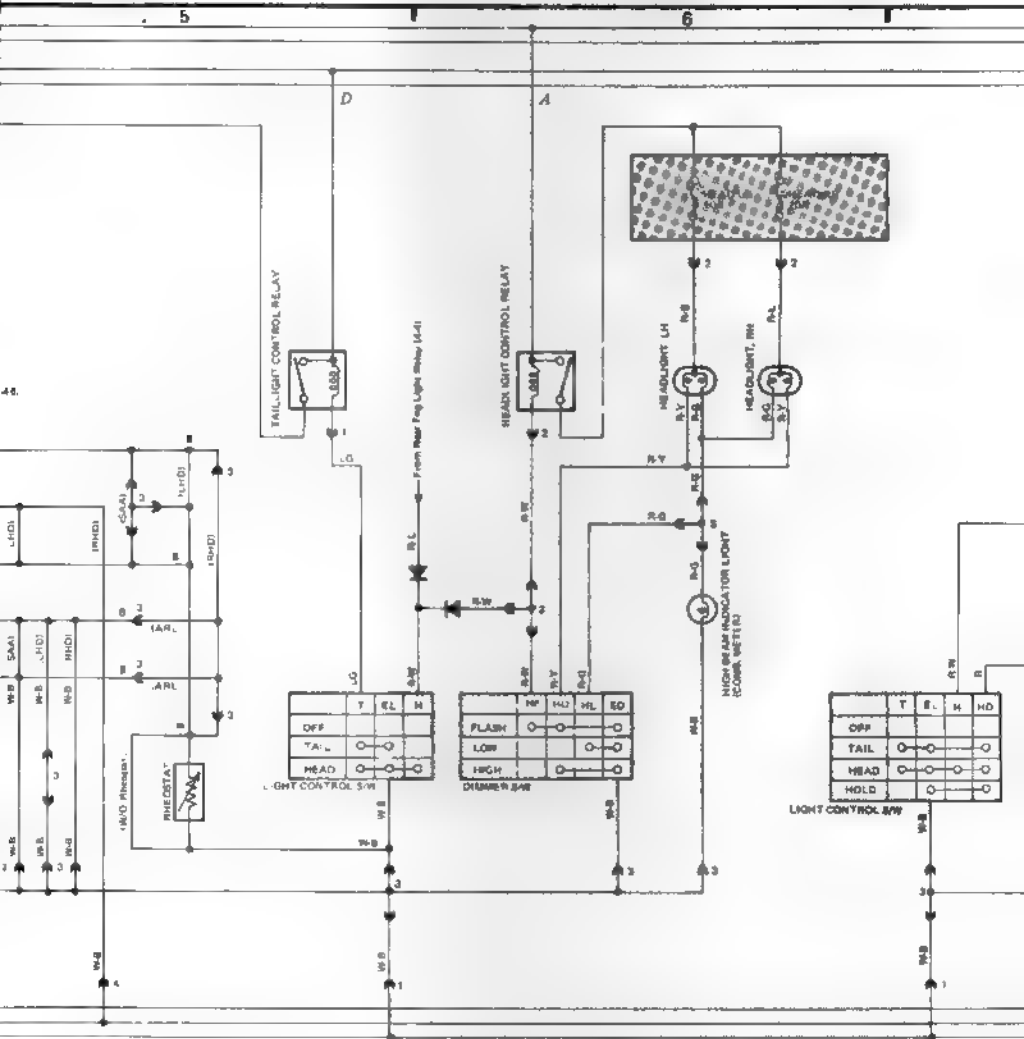


† = Located on dorsal of back, dorsal

on (Ex. W. Germany)



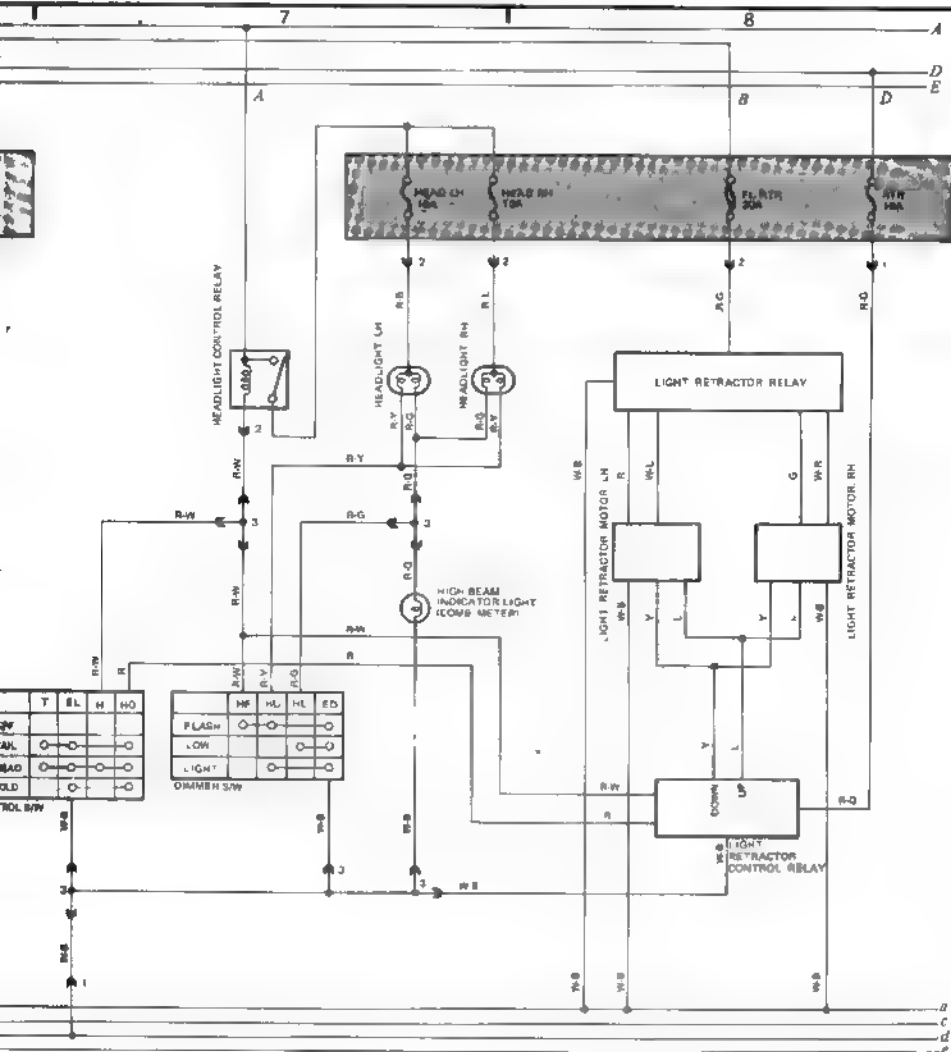
Headlight (Ex. Saudi Arabia and W. Germany)



Germany)

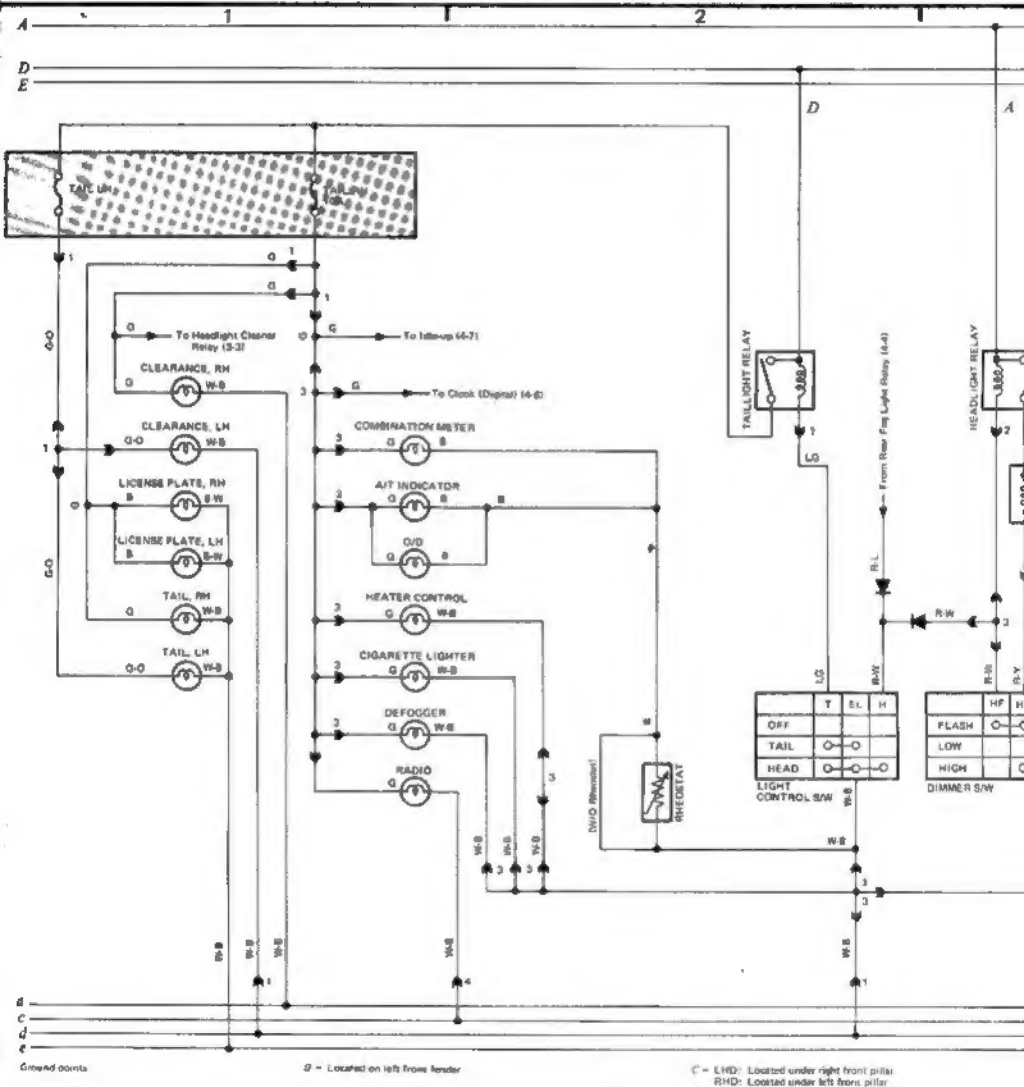


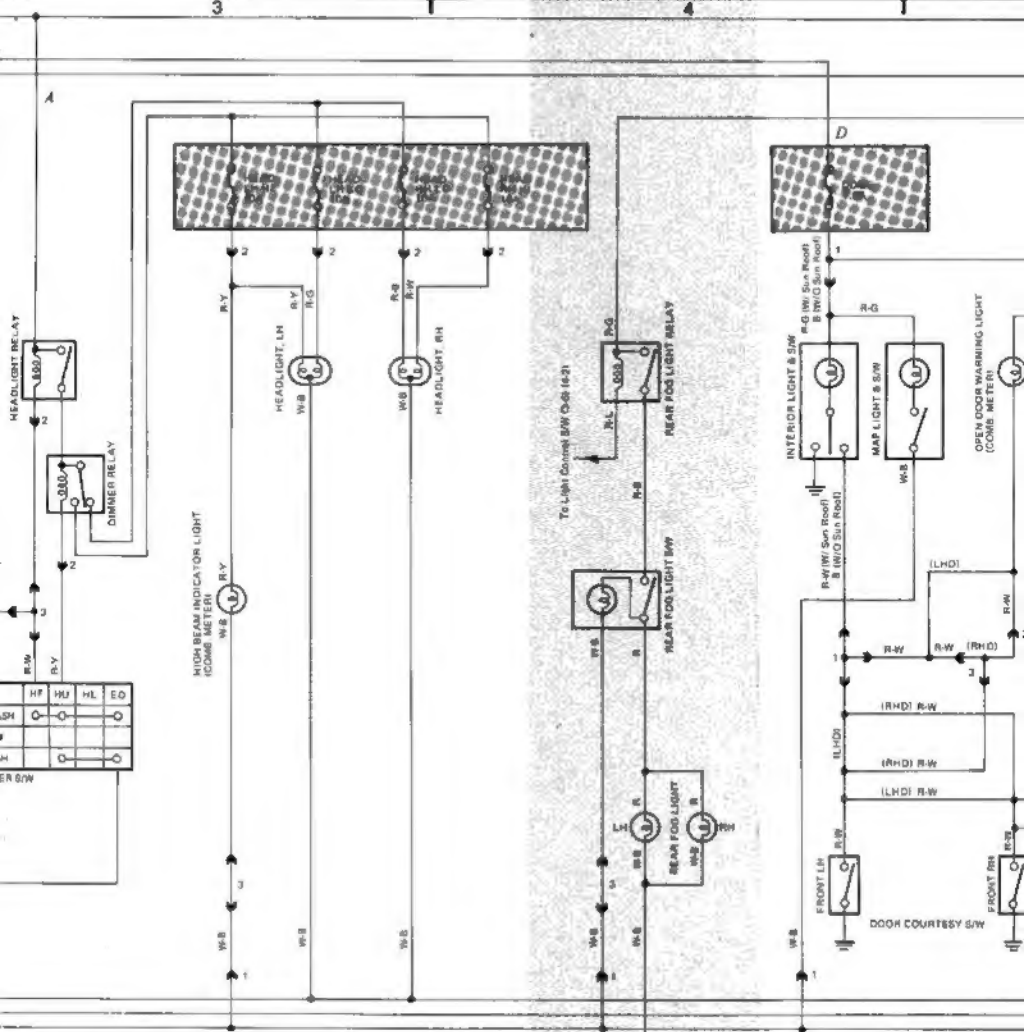
Light (For Arabia)





Tailight and Illumination (For W. Germany)





d - LND: Located under left front pillar
 RH7: Located under right front pillar

^a = Located on center of back panel.

Interior Light

5



Clock

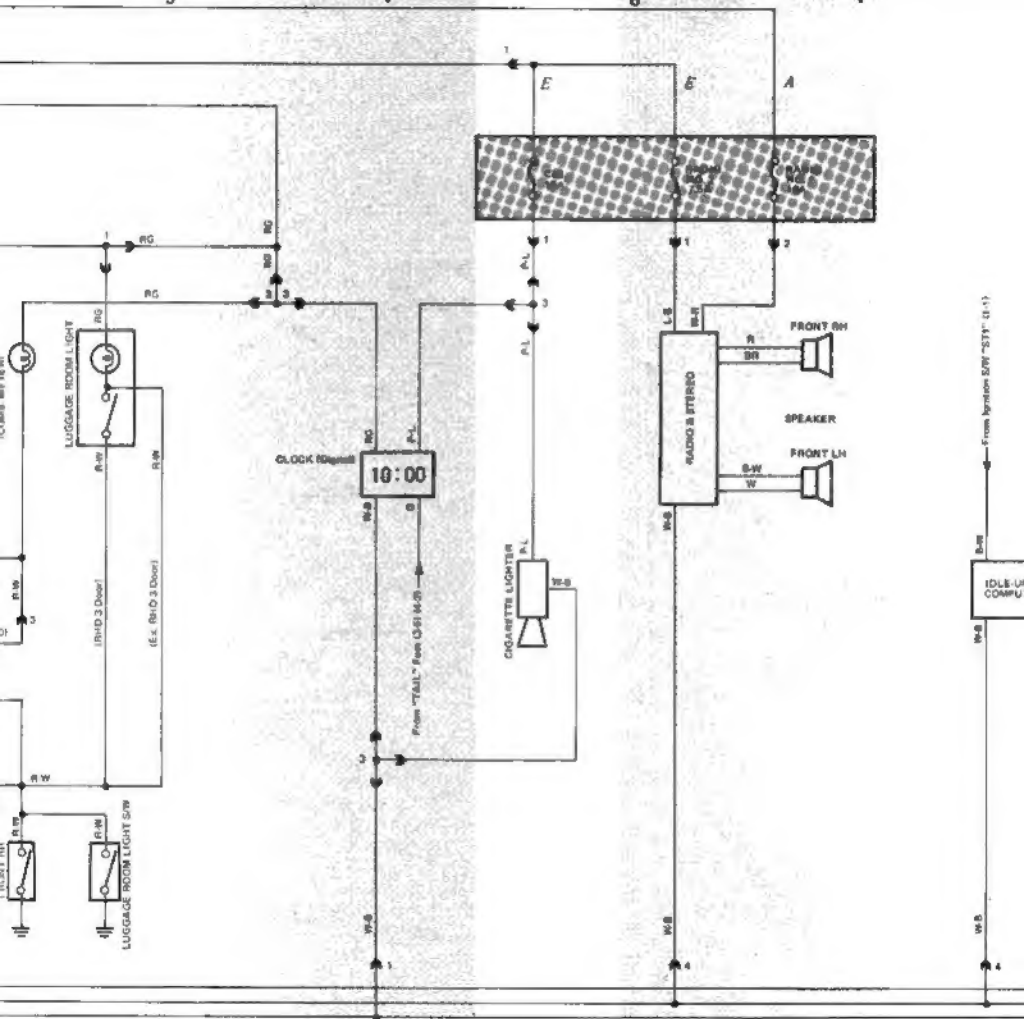


CIG. Lighter



Radio and Stereo

6



From Ignition SW "STY" (1-1)

W-B

B-W

4

and Stereo



Idle-up

7

8

MONT RH

MONT LH

MONT LH

